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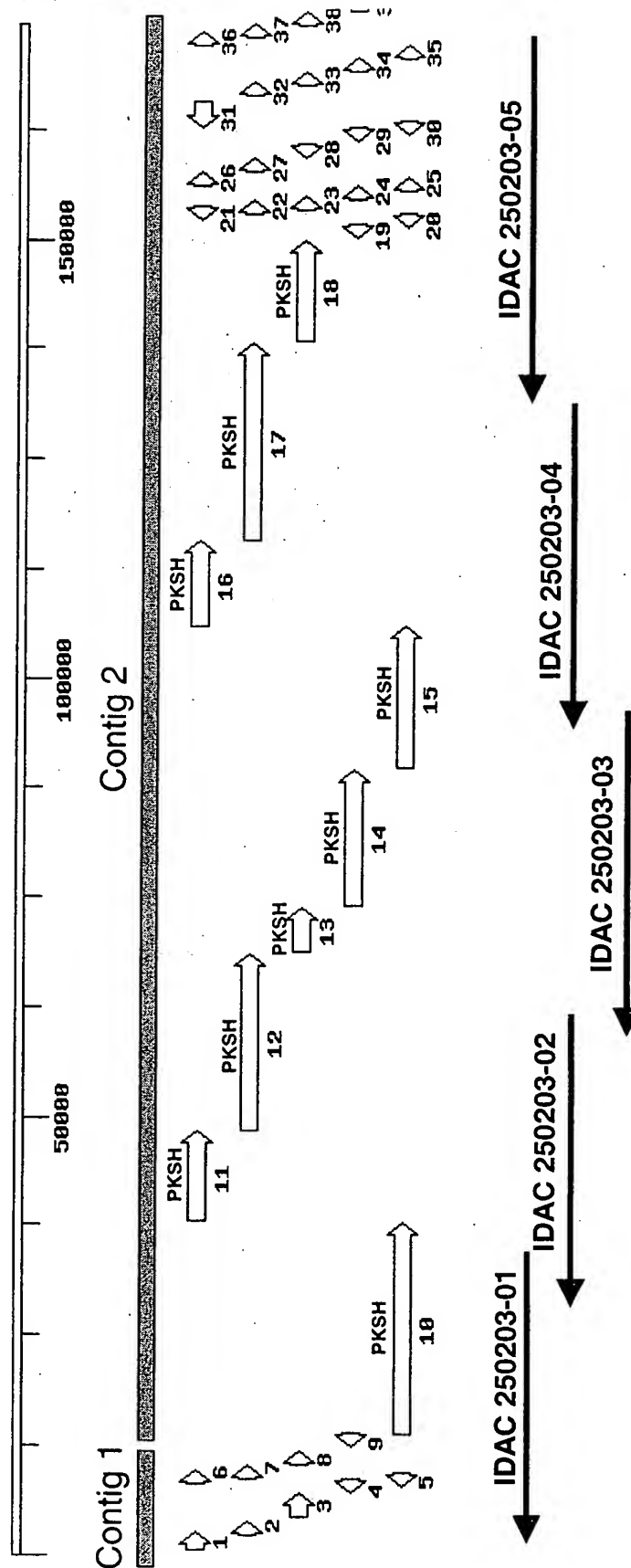
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Figure 1

Gene Cluster for Production of Compound 2(a)



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ORF10_pKS01      PIAIVGIGCHFPGGVQSPEALWNLVETGTD AISAFP TGRGWDL DALYDPPDRAGTSYAR
ORF10_pKS02      PIVIVMSSCRFPGGVRTPEDLWQLLADGTD T VAAFPADRGWDL DGLYSADPERSGTSYTR
ORF10_pKS03      PIAIVMSSCRFPGGVRTPEDLWRLVLDGTDAVGA F PADRGWDL DRLYSPDDPQGSTYTR
ORF10_pKS04      PIVIVMGCRFPGGVRLSPGGLVATGGDGI TGFPSDRGWNVEALYHPDPPDHAGTSYTR
ORF10_pKS05      PIAIVAMSCRFPGGVRTPEDLWRLLLSTGGDAIGE FFPADRGWDL SRLYSPDDPKQGTFFYAR
ORF11_pKS01      PIAIVAMSCRFPNGVGSPEDLWRLVDEGGDAITGF PADRGWDI ES LADPPDRKGTFFYNT
ORF11_pKS02      PIAIVAMSCRYPGGVRTPEELWRLVETGGDAIAGL PGNRGWDTALH -- -- ADEGRTFA
ORF12_pKS01      PIAIVGMSCRFPGGVSPEDLWRLVESGGDAISGF PVNRGWDI ES LYDPPDPHEGTTYAR
ORF12_pKS02      PIAIVAMSCRFPGGIASPEDLWQLLV TGRDGI TGF PADRGWDL D SLYSDDPDREGTSYAR
ORF12_pKS03      PIAIVMSSCRFPGGVRTPEDLWELLSTGGDAISDL PLDRGWDI DALYDADPSTQGSTYAR
ORF12_pKS04      PIAIVAMSCRFPGGVRTPEDLWQLLATGRDAIGE FFPEDRGWDAEALFGP - QFEQDAPYAR
ORF13_pKS01      PIAITAMSCRFPGGVRSPEELWELLRTGGDALTA F PADRGWDL DNLFSDDPPDHNTSVTR
ORF14_pKS01      PIAIVMGCRYPPGGVTSPEELWQLVVDGGDAISGF PADRGWDMETVYHPDPEHPGTSYAN
ORF14_pKS02      PIAIVAMSCRFPGGVQSPEDLWQLLSTGRDAISGF PDRGWDL DGLYDPSAGTSYVR
ORF14_pKS03      PIAIVAMSCRYPGDVRTPEDLWQLLTA GADGITRL PENRGWDI E GLYDPPDESQGSTYAR
ORF15_pKS01      PIAIVAMSCRYPGGIDTPEKLWDLVAHGRDAVSAY P TDRGWDAEVLFPDPPPETGIEAYEQ
ORF15_pKS02      PIAIVAMSCRYPGGVTTPEELWQLLAGGGDAISGF PADRGWDVESLYDPPDPHPGTSYTR
ORF15_pKS03      PIAIVGLCRYPPGGVESPDLLWRLVLEGRDAIT E FFPDRGWDDVALFDADPDQSGTSYAR
ORF16_pKS01      PIAIVAMSCRYPGGVRSPEDLWRLVENGDDAVSGF PVDRGWDVDEALYDPPDSGSSYVS
ORF16_pKS02      PIAIVAMSCRFPGGVRNPEELWQLLTS EGDGLSQF PLDRGWDDVALYDPPNPDAQGSTYTR
ORF17_pKS01      PIAIVGMSCRFPGGVIESPEGLWDLVAGGRDAIT D FPTDRGWDI ES LYDADPDQQGSTYTR
ORF17_pKS02      PIAIVGMSCRYPGGVTTPEELWQLVAGSVDAIS P FPTDRGWNLDALYADAPGRAGTSYTR
ORF17_pKS03      PIAIVAMSCRFPGDVRTPEDLWELLAEGRDGI S DLPDDRGWDT EALYDPPDPSPGSTYAR
ORF17_pKS04      PIAIVGMSCRYPGGVETPEDLWRLVVG GDAISEFPQGRGWDL ES LYDPPDPGKGTSYTR
ORF18_pKS01      PIAIVGMSCRYPGDVESPEDLWRLVSEETDAIS P FPTDRGWD MGRFLDADPDGGRGTSYVQ
ORF18_pKS02      PIAIVAMSCRFPGGVRSPEDLWGLVLDGRDAIS D MPDDRGWDEVLFPDPPDRPGTSYSR

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ORF10_pKS01      GAETQEYGPRLQ-----DATDGFEGYLVGTGNAASVASGRIAYTFGFEGPTVTVDTA
ORF10_pKS02      GTNGQDYLSLVTRGDG---LDGLEGHVGTGNAASVVSGRLSYVFGLEGPAITVDTA
ORF10_pKS03      GTNGQDYLSLITRESE----GLEGHLGTGNAGSVMSGRVSYVLGLEGPAVTVDTA
ORF10_pKS04      GVMYHDYVTGIGDGGSAVELPEGVEGYLGTGNAGSIASGRIAYTFGLEGPAVTVDTA
ORF10_pKS05      GTNGQDYGAMLQITPD----GIEGFLGTGNAASVVSGRLSYAFGLEGPAVTVDTA
ORF11_pKS01      GAGAMGYGADLKEA-----PEGLEGLLLTGGATSVLSGRVSYVFGLEGPAATVDTA
ORF11_pKS02      GAAYSQGYDAQLEQSG----VDGVLGHVMTGNAGSVMSGRVSYALGLEGPAVTVDTA
ORF12_pKS01      GASANAYGAGSHDL-----PDGVEGHLLTGTASSVLSGRLAYVFGLEGPAATIDTA
ORF12_pKS02      GSNAAQDYQLQLWLNDAD----GLEGHLGTGNAASVVSGRLSYTFGLEGPAVTVDTA
ORF12_pKS03      GTNGQDYLSVLLEEPE----GLEGHLGTGNAASVVSGRLSYVFGLEGPAVTVDTA
ORF12_pKS04      GTNGQDYLSVLVNSAD----GGDGFMSGTGNSASVVSGRLSYVFGLEGPAVTVDTA
ORF13_pKS01      GINGSDYLTPLLEAAE----DYAGHLGTGNASSVMSGRLSYTFGLEGPAVTVDTA
ORF14_pKS01      GTSNHDYLSALLSS-----SENVEGYLGTGNAASVASGRLSYTFGLEGPAVTVDTA
ORF14_pKS02      GTNGQDYLVNVIILAAPD----GVEGFLGTGNAASVVSGRVSYVLGLEGPAVTVDTA
ORF14_pKS03      GVMYHDYGARLH-----AVPDGVEGYLGTGSSSSISVGRVAYTFGLEGPAVTVDTA
ORF15_pKS01      GLMYHDYAARLF-----SVPEIEGFLGNGSSGSIASGRIAYTLGLEGPAVTVDTA
ORF15_pKS02      GVMYHDYAALLE-----RSKDGADGSLGSGSTGSIASGRVSYTFGLEGPAVTIDTA
ORF15_pKS03      GVMYHDYASRLT-----ALPEGVEGFLGTGNAASVISGRLSYAFGLEGPAITVDTA
ORF16_pKS01      GVMYHDYATRLD-----SVPEGVEGFLGTGSSGSIASGRVAYTFGLEGPAVTVDTA
ORF16_pKS02      GTNGSDYSLNVRAGAD----GLEGHLATGNAGSVVSGRLSYTFGLEGPAVTVDTA
ORF17_pKS01      GTNGQDYPELLREVPK----GVEGYLLTGNAASVVSGRISYTFGLEGPAVTVDTA
ORF17_pKS02      GVMYHDYLTRLP-----AVPEGLEGYLGTGTAGSVASGRISYTFGLEGPAVTVDTA
ORF17_pKS03      GQMHN DYVSRNL-----TVPEGVEGYLGTGSSSSIASGRVSYTFDFEGPAVTVDTA
ORF17_pKS04      GIMYHDYATRIT-----SVPDGEVGYLGTGNSGSIASGRVSYAFGLEGPVTVDTA
ORF18_pKS01      GVMYHDYASRLR-----AVPEEVEGYLGTGSSSSIASGRVSYTFGLEGPALTVDTA
ORF18_pKS02      GVMYNDYGTLLH-----RAPEGLEGYMGTSSSGSVASGRVSYTFGLEGPVTVDTA

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ORF10_pKS01 WGEVGMLLVERLSDARAKGHRILAVVRGSAINQDGASNGLTAPSGPSQQRVIRQALANA
ORF10_pKS02 WGEVGMLLVERLSDARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALAGA
ORF10_pKS03 WGEVGMLLVERLSDARRNGHPVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRAAALASA
ORF10_pKS04 WAEGAGMLLVERLSDAERNGHHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIREALASA
ORF10_pKS05 WGEVGMLLVERLSDARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALANA
ORF11_pKS01 WSEGVGVLVERLSDARRNGHPVLAVVRGSAVNQDGASNGLTAPNGPAQQRVIRQALENA
ORF11_pKS02 WGEVGMLLVERLSDARRNGHPVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRAAALASA
ORF12_pKS01 WSEGAGVLLVERLSDARRNGHHILAVVRGSAVNQDGASNGLTAPNGPAQQKVIRQALESA
ORF12_pKS02 WSEGVLILLVERLSDARRNGHPVLAVVRGTAVNQDGASNGLTAPNGPSQQRVIREALADA
ORF12_pKS03 WGEVGMLLVERLSDAERNGHHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRAAALASA
ORF12_pKS04 WGEVGMLLVERLSDARRNGHPVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRAAALASA
ORF13_pKS01 PAEGVGVLVERLSDARKNGRPVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRQALANA
ORF14_pKS01 LAEGVGILLVERLSDARRKGHPVLAVVRGTAVNQDGASNGLTAPNGPSQQRVILQALSNA
ORF14_pKS02 WGEVGILLVERLSDAQRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALASG
ORF14_pKS03 WGEAGMLLVERLSDARRNGHQVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRQALANA
ORF15_pKS01 WGEAGMLVLERLSEARRNGHPVLAVVRGSAVNQDGASSGLTAPNGPSQQRVIRQALAGA
ORF15_pKS02 WGEVGMLLVERLSDARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRAAALASA
ORF15_pKS03 WSEGAGVLLVERLSDARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALASA
ORF16_pKS01 WGEVGMLLVERLSDAQRNGHPILAVVRGSAINQDGASNGLTAPNGPSQQRVIRHQALTNA
ORF16_pKS02 PAEGVGVLVERLSDARRNGHPILAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALANA
ORF17_pKS01 WGEVGMLLVERLSDARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALTNA
ORF17_pKS02 WAEGAGMILVERLSDARRNGHQVLAVVRGTAVNQDGASNGLTAPNGPSQQRVIRQALANA
ORF17_pKS03 WGEVGMLLVERLSDARRNGHQVLAVVRGTAVNQDGASNGLTAPNGPSQQRVIRQALANA
ORF17_pKS04 WAEGAGMLLVERLSEARAKGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALAGA
ORF18_pKS01 WAEGAGMLLVERLSDARKNGHTVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRQALADA
ORF18_pKS02 WGEVGMLLVERLSDARAKGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALASA

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Figure 2d

ORF10_pKS01	AGIIKMIMAMRHGVLPRTLHVDAPTPHVDWEAGAVTLLTEAVEWPESDRPRRAGVSSFGM
ORF10_pKS02	AGVMKMVMAMRHGVLPRTLHVDGPTPHVDWSAGDVALLTEQREWPATGHPRRAGVSSFGL
ORF10_pKS03	AGIIKMVLAMQHGVLPQTLHVDEPTPHVDWSAGEVTLLTEQTAWPTVDRPRRAGVSSFGI
ORF10_pKS04	AGIIKMVMAMRHGVLPRTLHVDEPSQVDWEAGEVSLLTGAMPWPQTGRPRRAGVSSFGI
ORF10_pKS05	AGVIKMVLAMEHGVLPQTLHVDEPTPHVDWSAGDVALLTDAVEWPETGRPRRAGVSSFGF
ORF11_pKS01	AGIIKMVMAMRHGVLPRTLHVDEPTPNVDWTAGAVSLLTEPMPWPETGAPRRAAVSAFGV
ORF11_pKS02	AGIIKMVMAMRHGVLPRTLHVDEPTSHVDWSAGEVSLTSESAEWPLTERPRRAGVSSFGI
ORF12_pKS01	AGIIKMVMAMRHGVLPRTLHVDEPTSHVDWSTGAVALLTEPVWPETGRPRRVGVSAFGV
ORF12_pKS02	AGIIKMVMAMRHGVLPRTLHIDEPTPYVDWSAGDIALLTEQRAWPETGRPRRAGVSSFGY
ORF12_pKS03	AGVIKMVLAMEHGVLPQSLHIDAPSPQVDWEAGDIALLTEQRQWPETGRPRRAGVSSFGF
ORF12_pKS04	AGLMKMVLAMQHGVLPQTLHVDEPTPHVDWSAGDIALTERREWPETGRPRRAGISSFGV
ORF13_pKS01	AGVIKMVLAMQHGVLPQSLHIDEPTPHVDWESGAVSLLTEQTAWPETTHPRRAGVSSFGF
ORF14_pKS01	AGVIKSVAMAMRHGVLPRTLHVDEPTPEVDWSAGDVSLTTEARPWPLGDQPRRIGVSSFGM
ORF14_pKS02	AGVMKMVLAMQHGVLPQTLHVDEPTPHVDWSAGDVALLADAVAWPETGRPRRAGVSSFGI
ORF14_pKS03	AGVIKMVMAMRHGVLPRTLHVDEPTPHVDWSAGAVSLLTEQTPWPETGRPRRAGVSSFGI
ORF15_pKS01	AGIIKMVMAMRHGVLPRTLHVDEPTPNVDWSEGAVALTSEVPWPETGAPRRAVSSFGI
ORF15_pKS02	AGVIKMVLAIQHGVLPRTLHADRPSPHVDWSQGAVALTSEVPWPETGRPRRAGVSSFGI
ORF15_pKS03	AGIIKIVQAMRHGVVPKTLHVDEPTPHVDWSAGAVSLLTEQVAVWPETGRPRRAAISSFGF
ORF16_pKS01	ASIIKMVEAMRHGVVPKTLHLDEPTPHVDWEAGAVSLIGEKIAPWETGELRRAGVSSFGF
ORF16_pKS02	AGVMKMVLAMQHGVLPQSLHIAEPTPHVDWSAGEVALLTEERAWPETGREWRAGVSSFGF
ORF17_pKS01	AGIIKMVLAMQHGVLPESLHIDQPSGNVDWAAGDVKLLTEAVPWPQTGQPRRAGVSSFGV
ORF17_pKS02	AGIIKMILAMRHGVMPPSLHIGEPSPHIDWTAGAVSLLTEAAEWPDAGRPRRAGISSFGV
ORF17_pKS03	AGIIKMVQAMHHGVLPKTLHVDAEPSHVDWSAGAVSLLTEQMAWPETGRPRRAGVSSFGM
ORF17_pKS04	AGIIKMIMAIRHGVLPRTLHVDEPTPHVDWEAGAVSLLTSEVPWPETGAPRRAVSSFGI
ORF18_pKS01	AGIIKMVMMAIRHGRIKTLHVDEPTSNVDWSAGAVSLLRESVEWPETGRPRRAAISSFGI
ORF18_pKS02	AGIIKMVQAMHHGVVPKTLHVDEPSPHVDWSAGAVSLLTEQMAWPETGRPRRAAISSFGI

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ORF10_pKS01	SGTNAHVIVEEP
ORF10_pKS02	SGTNAHTIIEEA
ORF10_pKS03	SGTNAHTIIEQA
ORF10_pKS04	SGTNAHTIIEQP
ORF10_pKS05	SGTNAHTVLEQA
ORF11_pKS01	SGTNAHTIIEQA
ORF11_pKS02	SGTNAHTIIEQA
ORF12_pKS01	SGTNVHTIIEQA
ORF12_pKS02	SGTNAHAVIEQA
ORF12_pKS03	SGTNAHTIIEQA
ORF12_pKS04	SGTNAHTILEQA
ORF13_pKS01	SGTNAHVIVEQA
ORF14_pKS01	SGTNAHIILESA
ORF14_pKS02	SGTNAHTIIEQA
ORF14_pKS03	SGTNAHAIIEQA
ORF15_pKS01	SGTNAHTILEQA
ORF15_pKS02	SGTNAHTIIEQA
ORF15_pKS03	SGTNAHAIIEQA
ORF16_pKS01	SGTNAHVIVEQA
ORF16_pKS02	SGTNAHAIIEQA
ORF17_pKS01	SGTNAHTVIEQA
ORF17_pKS02	SGTNAHVIEQP
ORF17_pKS03	SGTNAHAIIELA
ORF17_pKS04	SGTNAHTIIEQA
ORF18_pKS01	SGTNAHTIIEQA
ORF18_pKS02	SGTNAHTIIEQA

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Figure 3a

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ORF10_pat01 VLLPWALSAKTPEALRAQAR-----RLGTLIAAQP--HVTPL---DIGHSLATTRGRF
ORF10_pat02 SVLPLLLISAKSDAGLRAQSE-----QLATHLVGNP--DVPIG---DIAYSLTTGRSGL
ORF10_pat03 LPLPYVLSAKSPEALRAQAS-----VLRTHLEATD--HNGPG--SDDLAFSLATARAHL
ORF10_pat04 PVVPWVLSGKGEEALRAQAR-----QLQSVVLRAP--ELRPV---DIAGSLAVGRASF
ORF10_pat05 GVMPWTLSAKSEALRVQAE-----RLRTRIA-----SDPLLQPVVDVAYSLATSRAAL
ORF11_pat01 AVLPTWLSGRSTAALRAQAA-----RLLTTQGQDG--ATEPGRPLDIGYSLATTRAAL
ORF11_pat02 GTVPYVLSAKSSDALRAQAR-----QLLAVVEAAE--SPRVA---DLAYSLATSRAGL
ORF12_pat01 KALPWLLSAKGRDALRDRAA-----QLLAYAEEHP--DLRPV---DIAGSLAVGRPSF
ORF12_pat02 PVLPLLVSGRTAPALRAQAERLRPAATALATGVTNSG--ALEAL---DLGYSLATSRAAL
ORF12_pat03 DFPVPLMLSAKSDVALRAQAA-----SLRARLIAAP--DMRLS---DVGSTLTTGRSAF
ORF12_pat04 AVSAWPLAGKTEAGLREQAE-----RLLAHIDAHS--ELR---PVDVGHSLATGRAAF
ORF13_pat01 -VVPWVLSGKSAGALRAQAE-----RLSGFLAGASAVDVPSV---DVGWSLASSRAGL
ORF14_pat01 GALPVVLSGRTEPALRAQAA-----ALHAHLAAHP--GLGIA---DLAFSQALTRAAL
ORF14_pat02 GPQPWLLSAKTRDALHDQAR-----RLHAHAELNP--ELSPA---DLGLSLAAGRSF
ORF14_pat03 SSVPLIVSARGEDALRAQAR-----RLHAHVHADP--GLRAV---DLGLSLATTRSAL
ORF15_pat01 VPPLWTLSAKSPAALRAQAG-----KLHAHLTAHP--GLRPG---DVGHSLATTRTDF
ORF15_pat02 SALPLQLAGRSAAALSAQAR-----ALSAHLT-----AHPDVPLADLAYSLATSRAF
ORF15_pat03 GSLPWLLSAKGADALRDQAA-----RLRAHAIGHP--ELSLA---DIGYALATSRTAL
ORF16_pat01 -VVPWVLSGKSAGALRAQAE-----RLSGWLAGASAAGVASV---DVGWSLASSRAGL
ORF16_pat02 -VLPWTLTAKTEKALQQAQAE-----RLLTQLT--TRSDLRLV---DVGHSLATTRTAL
ORF17_pat01 GPVPVVLVSGQSDAALRAQAE-----RLAHLRAHPGLGADTGTLTDLGFSLATSRSSL
ORF17_pat02 TPLPFALSGRTPAALRAQAA-----RLIGHLAPRP--EAAPA---DVALSLATTRTAL
ORF17_pat03 AALPWNLARTPDALRAQGE-----RLLSHLETHCE--THPETVLADIGHSLTTGRALF
ORF17_pat04 RVLFPVLSAKSAGALRGQAV-----RLKAHVEASP--EVSGAGAVDVAYSLATRRAVF
ORF18_pat01 PVLWPVVSARTEEAALHAQAE-----RLLAHVR-----TNPDAQPVGVALSLATGRAAL
ORF18_pat02 RVLFPVLSAKSAGALRGQAV-----RLKAHVEASP--EVSGAGAADVAYSLATRRAVF
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ORF10_pat01 EQRAIVLGDD---REAFDLALHALAEGN-----DTPSVVQGAA--APGKLAFLFTGCG
ORF10_pat02 ETRAILVGADN-RTGLAAALRSLAAGE-----QAPGLVQGTV--TEGGLAFLFTGCG
ORF10_pat03 EHRAVLT-ADD--PQEFREALARLADGD-----PSPRITTGAV--SDGRTAFLFTGCG
ORF10_pat04 EDRAAVV--AAD--REGLLAALALADGG-----SATGAVEGSA--VGKLAFLFTGCG
ORF10_pat05 ERRRAVVATE---RDEFLAGLKALASGQ-----PAPGLVQGR--VTEGGLAFLFTGCG
ORF11_pat01 EHRAVLL--GRT--EDDFAAALSALEGA-----ESAGLVQGRV--TEGGLAFLFTGCG
ORF11_pat02 DHRAALVADD---RENLTRALAALAADE-----QVPGLVRGTA--TGGGLAFLFTGCG
ORF12_pat01 EDRAAVV--AAD--REGLLAGLAALADGG-----SATGLVKGSSQLVGKLAFLFTGCG
ORF12_pat02 EHRAVLIGTPSD--GQALASRLDALAAGE-----QVPGLVQGT--SGGGLAFLFTGCG
ORF12_pat03 ERRRAALV--AGG--REGLLAGLEALADGG-----SAAGLVEGSP--VSGKLAFLFTGCG
ORF12_pat04 DHRAVLVAGDD--RSEFRRLAALASGE-----SVAQVVQGIARPDQVAFVFTGCG
ORF13_pat01 EHRAVVLG-----DHAAGVAASVSGV-----MAAGVVTGVS--VGGKTAFFVFTGCG
ORF14_pat01 DRRRAAVVADD---RDALLAGLAALAEGR-----PSADVVEGSA--TDGKLAFLFTGCG
ORF14_pat02 ERRRAVI--AAD--RDGLLAGLAALADGG-----AAAGLVEGSP--VAGKLAFLFTGCG
ORF14_pat03 EQRAALVAGD---RAELLRGLDALARGE-----DTAGLVRGTA--REGQVAFVFTGCG
ORF15_pat01 EHRAVLT--SADG--PVGLVRALEALADSAPEDTAPADRAPGVTRGRP--VAGKLAFLFTGCG
ORF15_pat02 DHRAVLVATEGTTAATAVTALDALADRR-----TAPGLVRGTASKGRTAFLFTGCG
ORF15_pat03 DRRRAAVVAGD---REEFLAGLAALAEGA-----TAAGLTEGSP--AGGKLAFLFTGCG
ORF16_pat01 EHRAVVLG-----DHAAGVGAVASGV-----MAAGVVTGVS--VGGKTAFFVFTGCG
ORF16_pat02 DQRAVLIGRDRP---DYLGAALTALAAGD-----TSPLLVOGAV--VGGKTAFFVFTGCG
ORF17_pat01 DRRRAVLFGDR---DSLLADLSALAEGE-----QPAGPVLGAV--GEGKTAFLFTGCG
ORF17_pat02 DRRRAVIAHD---RTELLAGLTALAEGH-----DSARLVQHTA--ADGRTAILFTGCG
ORF17_pat03 EHRATVVAGD---RDGFRAGLAALAEGR-----TAAGLIQSSSTGGRTAFLFTGCG
ORF17_pat04 DHRAVVVAGD---REELLRSLAAVESEG-----AAAGVTRGAVG--GGKLAFLFTGCG
ORF18_pat01 EHRAVVVATD---RETALADLAALASGE-----TSARVVLGEPGARGKTAFLFTGCG
ORF18_pat02 DHRAVVVAGD---REELLRALAAVESEG-----TAAGVTRGTAG--GGKLAFLFTGCG
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Figure 3b

	M1	
ORF10_pat01	SQRLGMGRELYETHPVFADALDDACWYLDQLELPL--LDVLFADEGSPEAALLHQYTAYT	
ORF10_pat02	SQRLGMGRELYETYPVFADALDAVCARMD--LEVPL--RDVLFAGY----AGLLDETAYT	
ORF10_pat03	SQRLGMGRELYEAYPVFADALDAVCAHVDAHLEVP--KDVLFAGD----AGLLDQYAYT	
ORF10_pat04	SQRLGMGRELYEAYPVFAEALDAVCAR----LELPL--KDVLFAGD----AGLLDETAYT	
ORF10_pat05	SQRLGMGRELYETYPVFADALDAVCVR----LELPL--MDVLFAGTE----RDALDETGYT	
ORF11_pat01	SQRLGMGRELYEAYPVFADALDAVCAR----LELPL--KDVLFAGD----AGLLDETAYT	
ORF11_pat02	SQRLGMGRELYETYPVFARALDAV----DARLELPM--KEVLFAGD----ADLLNETAHT	
ORF12_pat01	SQRLGMGRELYETYPVFAQALDAVCER----LELPL--KNVLFAGTD----SAALDETSYT	
ORF12_pat02	SQRLGMGRELYETYPVFAEALDAVCAR----LELPL--KEVLFAGD----GAALDQYAVT	
ORF12_pat03	SQRLGMGRELYEAYPVFADALDAVCVR----LELPL--MDVLFAGD----AGLLNETAYT	
ORF12_pat04	SQRLGMGRELYETYPVFADALDAVCAR----LELPL--KDVLFAGD----ADRLNETAYT	
ORF13_pat01	SQWVGMAVGLLDSSPVFAARVEECAKALEPFTDWSL--VDVLRGVEG---APSLERVDVV	
ORF14_pat01	SQRPGMGRELYATYPVFAQALDAVCER----LELPL--KDVLFAGTDGAA--GAALDETAYT	
ORF14_pat02	SQRLGMGRELYDTYPVFADALDAVCAHVDAHLEVP--KDVLFAGD----TGLLDQYAYT	
ORF14_pat03	SQRPGMGRELYDAHPVFADALDEICGELDRHLEVP--KGVLFATE----GDLIHQYAYT	
ORF15_pat01	SQRLGMGRELYETYPVFAQALDAVCERLN--LEVPL--RDVLFAGD----AGLLDQTVYT	
ORF15_pat02	SQRLGMGRELYEAPVFARALDAVCDR----LELPL--KDVLFAGTD----AGLLNETVYT	
ORF15_pat03	SQRLAMGRELYSAHPVFARALDAVCDG--LALDVPL--KQVLFAGSD----ADLLDRTAYT	
ORF16_pat01	SQWVGMAVGLLDSSPVFAARVDECAKALEPFTDWSL--VDVLRGVEG---APSLERVDVV	
ORF16_pat02	SQWVGMAVALLDASPVFAARVDECAKALEPFTDWSL--RDVLRGVTG---APSLDRVDVV	
ORF17_pat01	SQRLGMGRELYATHPGFARALDEVRAELDQHLEPL--FDVLFAGTPEADLLDETAYT	
ORF17_pat02	SQRPGMGRELYETYPFAEALDAVCAELDPHLEQPL--KEVLFATD----GDLLNRTGRT	
ORF17_pat03	SQRLGMGRELYEAYPVFARALDEVCA--LELPLPLKDVLFAGTD----TGLLNETAYT	
ORF17_pat04	SQRLGMGRELYETYPVFARALDAACAR----LELPL--KDALFAGTD----AGLLGETAYT	
ORF18_pat01	SQRLGMGRELYEYYPVFADALDAVCAR----LELPL--KDVLFAGD----ARLLDETAYT	
ORF18_pat02	SQRLGMGRELYETYPVFARALDAACAG----LELPL--KDALFAGD----AGLLDETAYT	
	** . * . * . * . * . * . * . * . * . * . * . * . * . * . * . * . * . * . *	
	M2	M3
ORF10_pat01	QPALFAVEVALFRLVDSWGLKPDFVAGHS	SIGEIAAAHVAGVFSLEDACMLVAARGRLMQA
ORF10_pat02	QPALFAVEVALFRLVSWGLRPDFVAGHS	SIGEIAAAHVAGVLSLDDACALVEARGRLMGA
ORF10_pat03	QPALFAVEVALFRLVSWGKPDFVAGHS	SIGEIAAAHVAGVFSLQDASELVFARGRLMQA
ORF10_pat04	QPALFAVEVALFRLVSWGLRPDFVAGHS	SIGEIAAAHVAGVFSLDDACALVEARGRLMGA
ORF10_pat05	QPALFAVEVALFRLVSWGVRPDFLAGHS	SIGEIAAAHVAGVFSLDDACALVEARGRLMQA
ORF11_pat01	QPALFAVEVALFRLVSWGKPDFVAGHS	SIGEIAAAHVAGVFSLEDACALVSARGRLMGA
ORF11_pat02	QPALFAVEVALFRLLESWGVRPDFLAGHS	SIGEIAAAHVAGVFSLDDACTLVEARGRLMQA
ORF12_pat01	QPALFAVEVALFRLVSWGLKPDFLAGHS	SIGEIAAAHVAGVFSLDDACALVSARGRLMGA
ORF12_pat02	QPALFAIEVALFRLVSWGLRPDFVAGHS	SIGEIAAAHVAGVFSLDACRLVEARGRLMQA
ORF12_pat03	QPALFAVEVALFRLVSWGLRPDFLAGHS	SIGEIAAAHVAGVLSLDDACALVEARGRLMGA
ORF12_pat04	QPALFAVEVALFRLVSWGVRPDFLAGHS	SIGEIAAAHVAGVFSLDDACALVEARGRLMQA
ORF13_pat01	QPALFAVMVSLAEVWRAAGVRPGAVIGHS	SQGEIAAACVAGILSLEDAARVVALRSQAIGR
ORF14_pat01	QPALFAVEVALFRLVSWGLKPDFLAGHS	SIGEIAAAHVAGVFSLDACRLVEARGRLMQA
ORF14_pat02	QPALFAVEVALFRLVSWGLRPDFLAGHS	SIGEIAAAHVAGVFSLQDASELVVARGRLMQA
ORF14_pat03	QPALFAVEVALFRLLESRGVQPDFLAGHS	SIGEIAAAHVAGVFSLQDASELVVARGRLMQA
ORF15_pat01	QTALFAVEVALFRLVSWGLKPDFLAGHS	SIGEIAAAHVAGVFSLDACALVSARGRLMGA
ORF15_pat02	QPGLFAVEVALFRLLESWGVRPDFLAGHS	SIGEIAAAHVAGVLSLDDVCAALVEARGRLMGA
ORF15_pat03	QPALFAVEVALFRLVSWGLKPDFLAGHS	SIGEITAHHVAGVLSLDDACTLVAAARGRLMQA
ORF16_pat01	QPALFAVMVSLAEVWRAAGVRPGAVIGHS	SQGEIAAACVAGILSLEDAARVVALRSQAIGR
ORF16_pat02	QPALFAVMVSLAEVWRAAGVRPDAVIGHS	SQGEIAAACVAGILSLEDAARVVALRSQAIGR
ORF17_pat01	QSALFAVEVALFRQLEQWGVGADFLIGHHS	SIGELAAHVSGVFTLADAALVAAARGRLMQA
ORF17_pat02	QPALFALETALYRLVSWGVRPDFVAGHS	SIGEITAHHVAGVLSLPDAATLVAAARGRLMQE
ORF17_pat03	QPALFAVEVALFRLVSWGLKPDFLAGHS	SIGEIAAAHVAGVLSLEDACALVSARGRLMGA
ORF17_pat04	QPALFAVEVALFRLLESWGVRPDFLAGHS	SIGEIAAAHVAGVLSLDDACALVEARGRLMQA
ORF18_pat01	QPALFAVEVALFRLVSWGLKPDFLAGHS	SIGEIAAAHVAGVFSLDACALVSARGRLMGA
ORF18_pat02	QPALFAVEVALFRLLESWGVRPDFLAGHS	SIGEIAAAHVAGVLSLDDACALVAAARGRLMQA
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ORF10_pat01 LPAG-GVMIALQASEDEVLPLLT----DRVSIAAINGPQAVVIAGDEDAAAAIAETFOQA
ORF10_pat02 LPGG-GVMIAVQAPEAEVLPLLT----ERVSIAAINGPQSVVIAGDEADAVAIVESFTG
ORF10_pat03 LPTG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIVESFTD
ORF10_pat04 LPAG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIVESFTG
ORF10_pat05 LPTG-GVMIAVQASEAEVLPLLT----ERVSIAAINGPQSVVIAGDEADAVAVESFTG
ORF11_pat01 LPAG-GVMIAVQASEAEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIGSFAD
ORF11_pat02 LPTG-GVMIAVQASEDEVLPLLT----QGVSIAAINGPQSVVIAGDEADAVAIAESFTD
ORF12_pat01 LPGG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIAESFAD
ORF12_pat02 LPGG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIAESFTG
ORF12_pat03 LPAG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIVESFTG
ORF12_pat04 LPTG-GVMIAVQASEAEVLPLLT----ERVSIAAINGPQSVVIAGDEADAVAIVDAFND
ORF13_pat01 VLAGLGGMVSVPLPAKAVRELIAPWGEGRISVAAVNGPSSVVVSGEAAALDELLVSCSE
ORF14_pat01 LPTG-GVMIAVEASEDEVLPLLT----DWVSIAAVNGPQSVVVGEDAAVAIAEFAAQ
ORF14_pat02 LPTG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIAESFTG
ORF14_pat03 LPTG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIAESFTD
ORF15_pat01 LPGG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIAESFAD
ORF15_pat02 LPGG-GVMIAVQASEAEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIVESFTD
ORF15_pat03 LPTG-GVMIAVEASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIAESFTG
ORF16_pat01 VLAGLGGMVSVPLPAKAVRELIAPWGEGRISVAAVNGPSSVVVSGEAAALDEMLASCESE
ORF16_pat02 VLAGLGGMVSVPLPAKAVRELIAPWGEDRISVAAVNGPSSVVVSGETAALDELLASCESD
ORF17_pat01 LPAD-GAMIAVEATEDEVAPLLT----GRVSIAAVNGPQSVVVGEDDAATALAETLRAR
ORF17_pat02 LPEG-GAMIALTATEDEVLPLLAGH-EDRIGIAAVNSASSVVISGEGLALEIAAEFFERR
ORF17_pat03 LPGG-GVMIAVQASEGEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIVESFS
ORF17_pat04 LPTG-GVMIAVQASEAEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIVESFTG
ORF18_pat01 LPAG-GVMIAVQASEDEVLPLLT----ARVSIAAINGPQSVVIAGDEADAVAIVESFTG
ORF18_pat02 LPTG-GVMIAVQASEDEVLPLLT----DRVSIAAINGPQSVVIAGDEADAVAIVESFSG

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Figure 3d

ORF10_pat01	WVRHVRDAVRYLDGVRTLHQRGVRTFLELGPDAVLTAMAQDCVDP-----QGAAFAPALR
ORF10_pat02	WVRHVREAVRFLDGMRLVLEAAGVTTYVELGPGGVLSALAQECVSG-----DGAAFVPVLR
ORF10_pat03	WVRHVREAVRFLDGIRTLEAAGVTKYVELGPDGVLSSAMAQDCVSG-----EGSVFIPVLR
ORF10_pat04	WVRHVREAVRFLDGIRALEAAGVTTYVELGPGGVLSALAQECVSG-----DGAAFVPVLR
ORF10_pat05	WVRHVREAVRFLDGTRTLEALGVTTYVELGPDGVLSSAMAQECVTG-----EDSVFVPVLR
ORF11_pat01	WVRHVREAVRFLDGIRTLEAAGVTKYVELGPDGVLSSAMAQDCVSG-----EGSVFIPVLR
ORF11_pat02	WVRHVREAVRFLDGIRALESRGVTTYIELGPDGVLSSALAQDCLTAGTG-TGTAIFAPVLR
ORF12_pat01	WVRHVRETVRFLDGIRTLEAAGVTKYVELGPDGVLSSALAQDCVSG-----EDSVFIPVLR
ORF12_pat02	WVRHVREAVRFLDGIRALEAAGVTTYVELGPGGVLSALAQECVSG-----DGAAFVPVLR
ORF12_pat03	WVRHVREAVRFLDGIRALEAAGVTTYVELGPDGVLSSAMAQECVTE-----GGAAFVPVLR
ORF12_pat04	WVRHVREAVRFLDGIRALEAAGVTTYVELGPDGVLSSAMAQECVTG-----EGAAFVPALR
ORF13_pat01	WFQNLRRTVELEEATRLLLEQGFGVFVESSPHPVLSVGMQETVEDAG---REAAVLGSLR
ORF14_pat01	WVRHVREAVRFLDGIRWLESRGVTTYIELGPGGVLSALGQDCQTATG---PRAAFLPALR
ORF14_pat02	WVRHVREAVRFLDGIRTLEAAGVTKYVELGPDGVLSSAMAQDCVSG-----EGSVFIPVLR
ORF14_pat03	WVRHVREAVRFLDGIRALEAAGVTTHIELGPDGVLSSAMAQECVSG-----EDTVFVPVLR
ORF15_pat01	WVRHVREAVRFLDGIRALEAAGVTTYVELGPDGVLSSAMAQDCPSA-----DTAAFLGSLR
ORF15_pat02	WVRHVREAVRFLDGIHALEAAGVTTYVELGPDGVLSSAMAQECVTG-----EDSVFVPVLR
ORF15_pat03	WVRHVREAVRFLDGIRTLEAGVTTYIELGPGGVLSAMGQSCVTR-----DDAFLPALR
ORF16_pat01	WFQNLRRTVELEEATRLLLEQGFGVFVESSPHPVLSVGMQETVEDAG---REAAVLGSLR
ORF16_pat02	WVRHVREAVRFLDGIRTLEAAGVTTYVELGPDGVLSSAMAQDCVSG-----EDSVFVPVLR
ORF17_pat01	WVRHVREAVRFLDGIRWLESRGVTTYIELGPGGVLSALGQDCQTATG---PRAAFLPALR
ORF17_pat02	WVRHVREAVRFLDGIRTLEAAGVTTYIELGPDGVLSSAMAQECVTG-----EDSVFVPVLR
ORF17_pat03	WVRHVREAVRFLDGIRALEAAGVTTYIELGPDGVLSSAMAQECITG-----EGAAFAPVLR
ORF17_pat04	WVRHVREAVRFLDGIRTLEAAGVTTYVELGPDGVLSSAMAQDCVTG-----EGAAFAPALR
ORF18_pat01	WVRHVREAVRFLDGIRALEAAGVTTYVELGPDGVLSSAMAQACVTG-----ENSVFVPVLR
ORF18_pat02	WVRHVREAVRFLDGIRALEAAGVTAYVELGPDGVLSSALAQECVTG-----EGAAFAPALR

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ORF10_pat01	SGRPEAATVLNAVAHAHVGAETDWAFFAGTGAQRVDLPTYAFQRRYWM--
ORF10_pat02	SGRPEAETAVTALAQAHVGRVVDVWAAFFSGTGVRVDLPTYAFQRRFWP--
ORF10_pat03	KARPEAESVTALASAHVHGIPVDWQAYFAGTGAQRVDLPTYAFQRRYWP--
ORF10_pat04	SGRSEAEATVATAQAHVGRVNVWAAFFAGTGAERVLDLPTYAFQRRYWL--
ORF10_pat05	SGRPEAESVTALAQVHVIRGIAVDWQAYFAGTGAQRVDLPTYAFQRRYWL--
ORF11_pat01	KARPEAESVTALATAHVHGIPVDWQAFYAGTGAQRVDLPTYAFQRRYWL--
ORF11_pat02	AARPEAESVTALATAHVHGIPVDWQAFYAGTGAQRVDLPTYAFQRRYWP--
ORF12_pat01	KARPEAETVATLASAHVHGIPVDWQAFYAGTGAQRVDLPTYAFQRRYWI--
ORF12_pat02	SGRSEAEATVATAQAHVGRVVEVDWAAFFAGTGAERIDLPTYAFQRRYWP--
ORF12_pat03	KGRPEAETVMATLGQAHVGRVAVDWHVSVYG-TGAQRVDLPTYAFQRRYWP--
ORF12_pat04	KGRPEAETITAAALAHVHGIPVDWQAFYAGTGAQRVDLPTYAFQRRYWV--
ORF13_pat01	RGEGLERFWLSLGEAWVRGVGDVWHAFFAGTGAQRVDLPTYAFQRRFWPEA
ORF14_pat01	TGRPEASSLTAAGAHVGRGLSPDWTVRFAGTGAQRVDLPTYAFQRRYWP--
ORF14_pat02	KARPEAESVTALATAHVHGIPVDWQAFYAGTGAQRVDLPTYAFQRRYWP--
ORF14_pat03	PGRPEAETVTALARVHVGVVDWQAFYAGTGAQRVDLPTYAFQRRYWL--
ORF15_pat01	KGRSETGSLTDALARLHVGGVAVDWDAYYSGTDVQRVDLPTYAFQRRYWL--
ORF15_pat02	SGRPEAESVTALAQAHVGRVIAVDWQAFYAGTGAQRVDLPTYAFQRRYWP--
ORF15_pat03	ADRSEETLTSAVARAHLRGITVDWDAYYSGTGARRVDLPTYAFQRRYWL--
ORF16_pat01	RGEGLERFWLSLGEAWVRGVGDVWHAFFAGTGAQRVDLPTYAFQRRYWL--
ORF16_pat02	RGEGLERFWLSLGEAWVRGVGDVWHAFFAGTGAQRVDLPTYAFQRRYWL--
ORF17_pat01	GDRPEAAAFATAVAQAHVGVAVDWSAVFAGRGATRIDLPTYAFQRRYWP--
ORF17_pat02	RDRGEAEALTAIAAAHTRGVPLDWSAYFAGTGAQRVDLPTYAFQRRYWL--
ORF17_pat03	AGRDEAETVLSALAAHVGRVVDWQAFYAPAGAQRVPLPTYAFQRRYWL--
ORF17_pat04	KGRPETETITLALAHAGTSVDWETFFAGTGAQRVDLPTYAFQRRYWL--
ORF18_pat01	SGRSEAESVTALAQAHVGRVIAVDWQAFYAGTGAERVLDLPTYAFQRRYWI--
ORF18_pat02	KGRPEAETITLALAHNHGTSVDWETFFAGTGAQRVDLPTYAFQRRYWI--

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Figure 4

ORF10_pDH03	IGLGDAGHPLLGAAVALADSEGVLFTGRLSLDTHPWLADHTILGSVLLPGTAFVDLAIRA
ORF11_pDH01	AGLDPAGHPLLGAAVTLAGSDSVLFTGRLSLRTQPWADHTVSGTTVLPGAAFVELAVRA
ORF12_pDH01	AGLEEAGHPLLGAAVPLADSEGFLFTGRLGRTSHPWADHAVMDTVLLPGTAFVDLAVRA
ORF12_pDH04	AGIGSAGHPLLGAAVELPDSGDGLFTGRLSLRTHPWLADHVVDTVVVPGAAFVELAVRA
ORF14_pDH02	IGLDDTAHPLLSAGVALPESDGMVFAGRLALSTHAWLADHAILGSVLLPGTAFVELATRA
ORF14_pDH03	AGLDAADHPLLGATVSLPGSDGLVLTGRLALSTHPWLSLDTVMOTVLLPGTAFVELALRA
ORF15_pDH01	AGLGAAGHPLLGAAVALADLDGFLYTGRLSLDTHPWLADHAVMGSVLLPGTAFVELAIRA
ORF15_pDH02	LGLAAAGHPLLGAAVTLADADGCVLTGRLSLRTHPWLADHAVMGSVLLPGTAFVELALHA
ORF15_pDH03	AGLGSAGHPLLGAAVELPDSGDGLFTGRLSLRTHPWLGDHVRVAGTVLLPGAALLELAVRA
ORF17_pDH01	AGIGAADHPLLGAAIALADGDGHLFTGRLSLATHPWLADHTVMDTVLLPGTAFVELALQA
ORF17_pDH02	AGMGAHHPLLGAAVALADGEGFLFTGRLSLDTHPWLADHAVMGNVLLPGTAFVELAIRA
ORF17_pDH03	AGLGATDHPLLSAAVELPDSGDGLFTGRLSLATHPWLADHAVLGSVLLPGTAFVELALRA
ORF17_pDH04	FGLGATDHPLLDATIELPDSGDGLFTSRLSLDTQPWADHAVLGSVLLPGTAFVELAVRA
ORF18_pDH01	AGLRSADHPLLGASVALADAEGLLLGTGRLSLDTHPWLADHAVAGTVLLPGTAFVELALRA
ORF18_pDH02	AGLGAEHPLLGAAVELPDSGGLLTGRLSLLSHPWADHAVAGTVLLPGTAFVELALHA
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ORF10_pDH03	GDQVGCDVVEELTLEAPLVVPQRGGVQLQLVVEAP--SGPGQRPFVSVHS
ORF11_pDH01	GDQAGCERVEALVLDAPLALPAEGAVRVQVLVEAP--DEQGRRPFTVSS
ORF12_pDH01	GDQVGCDVVEELTLEAPLVLPERGAVQIQMHVGAPDADGTGRRTFTLSS
ORF12_pDH04	GDEVGCEEVEELVLEAPLVLPKGAQVQLRLSVGGA--DDQGRRSVHVHS
ORF14_pDH02	GDQVGCDYLEELTLEAPLVLPPEHGGVQLRVWVGAA--DESGRRPFALHS
ORF14_pDH03	GELVGCGAVEELALEAPLTLADQGAQVQFLAVDAP--DGAGRRTLTLS
ORF15_pDH01	GDQVGCDLLEELTLHAPLVLPAGGVQVQLWVGAP--DATGRRTLGVHS
ORF15_pDH02	GERVGTALDELTLQAPLILPNEGAVQLQVVVGAP--DAAGHRTVAVYS
ORF15_pDH03	GDHAGCDLLEDLTLEAPLVLPPEAGGVQLRLVVAEP--DASRRRVFHIYS
ORF17_pDH01	GDHTGCDLLEDLTLEAPLVLPPEHGGVQIQAVGAP--DAEGRRSLTLS
ORF17_pDH02	GDQAGCDLLEELTLEAPLILAPQAAARLQIVVGAP--DGSGRRTLDVYS
ORF17_pDH03	GDQVGCDLIDELTLEAPLVLPPEHGGVQLRLAVAAA--DATGRRTLAFHS
ORF17_pDH04	GDQVGCDVLEELTLEAPLVVPERGGVQLRLTVAAA--DESGRRGLSLYS
ORF18_pDH01	GDQVGCDLIDELTLAAPLVLPPEQGGVELQITVAAP--DESGRRSVAFHS
ORF18_pDH02	GQRVGSGLLEELTLEAPLVLPERGALQLRVSVAAP--DEAGRRLHVHS
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Figure 5

ORF17_per02	QLAVRRGTVHAPRLARVPAATPLTPPPGESAWRMDIEDKGTLDHLLTVSPESAAPLEPG
AAF71776_mod05 NYST	QLALRDGGVLAARLARFDTAALTPPAD-RAWRLDSTAKGSLNGLALTPYPAALAPLTGH
AAF71767_mod15 NYST	QAVVREGTVRVGRLARLDSGRGLVPPPG-TPWRLGSRAGSLDGLALLPHEARRPLTGH
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ORF17_per02	QVRVAVRAAGLNFRDVLNALGMYPG-DPGLMGSEGAGIVVETGPGVTGLAPGDRVMGMLP
AAF71776_mod05 NYST	EV RVVEVRAAGLNFRDVLNALGMYPGDDVGSFGSEAAGVVVEVGPEVTGLAPGDQVMGMIT
AAF71767_mod15 NYST	EV RVVGIRAAGLNFRDVLNALGMYPG-DAGLFGSEAAGVVVEVGPEVTGLAPGDRVMGMLF
	: * * * : *
ORF17_per02	GSFGPLAVVDRRMIA PMPEGWTF AEAA SVPIV FMTAYYALHDLA GLQGGS L V H A A A G G
AAF71776_mod05 NYST	GSFGSLAVDDARRLARLPEDWSWETGASVPLVFLTAYYALKELGGLRAGEKVLVHAGAGG
AAF71767_mod15 NYST	GGFGPLGIADARLLTPVPADWSWETGASVPLVFLTAYYALKELGGLRAGEKVLVHAGAGG
	* . * * . * . : * * : : * * . * . : : . * * * . * * : * * * . * . : * * * . * * : * * * . * *
ORF17_per02	VGM AAVQLARHWGADVYATASPAKWDTLRGLGLGDDRIASSRTLDFEETFRATATGGRGVD
AAF71776_mod05 NYST	VGM AAIQIARHVGAEVFATASEGKWDVLRSLGVADDHIASSRTLDFEAAFAEVAGDRGLD
AAF71767_mod15 NYST	VGM AAIQIARHVGAEVFATASEGKWDVLRSLGVADDHIASSRTLDFEAAFAEVAGDRGLD
	* * * * . * . : *
ORF17_per02	VVLDSLAREFVDASLRLLP RGGRFVEMGKTDVRS PQDVADAH PGVS YQAFDL TEAGLDRI
AAF71776_mod05 NYST	VVLNSLAGDFVDASMRLLGDGGRFLEMGTDIRAADSVPD---GLSYQSFDLAWVVPETI
AAF71767_mod15 NYST	VVLNALSGEFVDASMRLLGDGGRFLEMGTDIRAADSVPD---GLSYHSFDLGMVDPEHI
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ORF17_per02	QEMLTELLTLFRSGALRPVPVSAWDLRQAPEAFRYLSQARHVGKIVLTLP
AAF71776_mod05 NYST	GTMLAELMDLFRTGALRPLPVRTWDVRHAKDAFRFMSMAKHIGKIVLTLP
AAF71767_mod15 NYST	QRMLDLVELFDRGALAALPVRSDVRRAGEAFRFMSLAQHIGKIVLTVP
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Figure 6a

ORF10_pKR01	PTGTVLVTGGTCVLGGRVARWLAGA-GAERLVLTSSRGLDAPGAVELVEELTTGFGVEVS
ORF10_pKR02	PTGTVLVTGGTCVLGGRVARWLAGA-GAERLVLTSSRGLDAPGTAEELVEELTS-SGVEVS
ORF10_pKR03	PSGTVLVTGATCTLCGLFARHLVTAYGVRLLLLTSRRGPEAEGAAELVAELEQ-LGAHVE
ORF10_pKR04	PTGTVLVTGGTCVLGGRVARWLAGA-GAERLVLTSSRGPDPAGAAELVEELTTGFGVEVS
ORF10_pKR05	PRGTVLVTGGTCALGGRHVARWLAH-GAEHLVLTSSRGPQAPGADALVAEIAA-LGAGAT
ORF11_pKR01	PAGTVLITGCSCTLAGIVARHLATAHGVRLLLLSRRGADAPGAGELTAELAG-LGAQVS
ORF11_pKR02	PRGTVLVTGGTCALGRHVARHLAER-GAERLVLTSSRGADAPGAAETEELSA-FGAAVT
ORF12_pKR01	PGSTVLITGAGCMLGGLIARRLVAEHGVRHLLLVGRRGAAAPGAEQLSAELAE-AGASVT
ORF12_pKR02	PTGTVLVTGGTCVLGGRVARWLAGA-GAERLVLTSSRGPDPAGAAELVEELTTGFGVEVS
ORF12_pKR03	PTGTVLVTGGTCVLGGRVARWLAGA-GAERLVLTSSRGPDPAGAAELVEELAG-SGVEVS
ORF12_pKR04	PRGTVLITGASGLAGLFARHLVAEHGVRHLLLTSSRGAAAEGAAQLADELVA-LGAQVT
ORF13_pKR01	PQGTTLVTGGTCALCAHVARWLAGN-GAEHLLLTSSRGPDPAGAAALDELTA-LGTQVT
ORF14_pKR01	TTGTALITGGTCALGGRHVARWLAGN-GAQHLLLVSRRGPEAEGADALAAELAE-LGAEVT
ORF14_pKR02	PGGTVLITGATCAGLGLFARHLAAEHGVERLLLVGRRGADAPGAAELVAELAE-SGTLAT
ORF14_pKR03	ADGTVLVTGASCTLCGLFARHLATTHGARHLLLTSSRGDRAPGAGELTRELTE-AGVDVT
ORF15_pKR01	PDGTVLVTGASCTLCGLVARHLVTGRGVRLLLLSRRGADAPGAGELAAELTG-LGAEVS
ORF15_pKR02	VDGTVLVTGASCTLCGLFARHLVVERGVRLLLLVSRRGAAEGAAELAAELRE-LGADVR
ORF15_pKR03	PEGTVLITGASCTLCGLIARHLVTEHGVRHLLLTSSRGAAAEAGATQADELVT-LGAQVT
ORF16_pKR01	PQGTTLVTGGTCALCAHVARWLAEN-GAEHLLLTSSRGPDPAGAAALDELTA-LGAQVT
ORF16_pKR02	PDGTALVTGATCTLCGLFARHLVAAHGVRHLLLTSSRGAAAAGAAELAAELRE-LGAEVT
ORF17_pKR01	SQGTVLITGCTCTLCAGVARHAVTTRGARLLLLTSRRGAAAAGAAELAAELRE-LGAEVT
ORF17_pKR02	VDGTVLVTGASCTLCGLFARHLVVERGVRLLLLVSRRGAAAAGAAELGAELTE-LGADVR
ORF17_pKR03	SDGTVLVTGASCTLCGLFARHLVVERGVRLLLLVSRRGAAAAGAAELGAELTE-LGADVR
ORF17_pKR04	SDGTVLVTGASCTLCGLFARHLVVERGVRLLLLVSRRGAAAAGAAELGAELTG-LGADVR
ORF18_pKR01	PDGTVLITGCTSLGSLIARHLVVEHGVRHLLLTSSRGAAAAGAPELVAALAE-LGAEAT
ORF18_pKR02	

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ORF10_pKR01	VVACDAADRDLRALLSAEAG-----SLTAVVHTAGVLDDGVLDALTPDRIDSVVRKAV
ORF10_pKR02	VVACDAADRDLRALLSSEAG-----SLTAVIHTAGVLDDGVLDALTPDRIDGVVRKAV
ORF10_pKR03	LVACDAADRSALAALLGAVPSE---HPLTAVVHTAGVLDDGILSSLTPERVAAVLRPKVD
ORF10_pKR04	VVACDAADRDLRLLTLLSAEAG-----TLTAVIHTAGVLDDGVLDALTPDRIDSVLRKAV
ORF10_pKR05	AVACDVTDRTAVSELLAGLDGTGYPGLTAVFHTAGAGQFAPLDGTGPGEVAEVVAAKVA
ORF11_pKR01	WAACDAGDRDALAAVLAAPVAA---HPLTAVVHTAGVLDDGVIGSLTPERLDTVLRPKAD
ORF11_pKR02	LVACDVADRDLGTLVARLAAD--GTPVRAVVHAAGVSQ--PPGTGTDLPGFARVVAAKTA
ORF12_pKR01	WAACDVADRDLASAVLHAIPAE---HPLGAVVHTAGVLDDGVIASLTPERLSAVLRPKVD
ORF12_pKR02	IVACDAADRDLRALLSAEAG-----TLTAVIHTAGVLDDGVLDALTPDRIDSVLRKAV
ORF12_pKR03	VVACDAADRDLRALLSAEAG-----TLTAVIHTAGVLDDGVLDALTPDRIDSVLRKAV
ORF12_pKR04	WAACDVADRDLAALLASVPAE---QPLTAVVHTAAVLDDGVVDLTPERVDRVLRPKAE
ORF13_pKR01	IASCDMADRDAVTALIAATIPAD---QPLTAVIHAAAVVDDGVIETLAPEQVEAVLRVKVD
ORF14_pKR01	IAACDVADRDAVAALLATLPAE---HPLTNVVHAAGVLDDGVLDQTPQRLAGVLRPKAH
ORF14_pKR02	WAACDVADRDLAALLADI PAE---HPLTAVVHTAGVLDDGVISLTPERLSAVLRPKVD
ORF14_pKR03	WAACDAADRDLAALLAIPAD---RPLTAVVHTAGVLDDGIIDSLTPERLDTVLRPKVD
ORF15_pKR01	WAACDAGDRDALAAVLAAPVAA---HPLTAVVHTAGVLDDGVIGSLTPERLDTVLRPKAD
ORF15_pKR02	WAACDVADREALESVLGIPAE---YPLSGVVHTAGVLDDGVVSSSLTAERVSAVLRPKVD
ORF15_pKR03	WAACDAADRDLAALLLESVPAA---HPLTAVVHTAGVLDDGTVESLTAGRMAVLRPKVD
ORF16_pKR01	IAACDVSDRDAVAALIAAVPAD---QPLTAVVHTAAVLDDGVIEALTPEQIERVLRVKVD
ORF16_pKR02	IATCDMADRDAVAALIAAVPAD---QPLTAVMHTAGVLDDGVIDALTPERFTVLRPKAD
ORF17_pKR01	IAACDAADRDLAALLIGSVPAE---HPLTAVVHTAGVLDDGVLEALTPERIDAVLRPKVD
ORF17_pKR02	IAACDAADRDLAALLIESIPSE---HPLTAVIHTAGVLDDGVVDSLTPERLSTVLRPKVD
ORF17_pKR03	WAACDVADRDALEAVLAGIPAE---YPLSGVVHTAGVLDDGVVSSSLTPERLSAVLRPKVD
ORF17_pKR04	WAACDVADRDALESVLGIPAE---YPLSGVVHTAGVLDDGVVSSSLTPERLSAVLRPKVD
ORF18_pKR01	WAACDVADREALESVLGIPAE---YPLSGVVHTAGVLDDGVVSSSLTAERVSAVLRPKVD
ORF18_pKR02	VAACDAADREALAALLAGIPAA---HPLTAVVHTAGRVDDGLLASLSPERIDTVLRPKAD

..** ***: : : : : *:*:*: : : *:*:

```

ORF10_pKR01      SALNLHELTAELGIELSDFVLFS SVTGTVGAAGQANYAAANAFLDALAEQRRADGLAATS
ORF10_pKR02      AAWNHLHELTAELGIELSAFVLFS SMSGTVGTAGQANYAAANAYLDALAEQRRADGLAATS
ORF10_pKR03      AAWNHLHETREL--GLSAFVLFS  GAAAAGFAAGQGNVAAANSFLEALAEQRRAEGLPATS
ORF10_pKR04      SAFNLHELTAELGIELSAFVLFS SMSGTVGAAGQANYAAANAYLDALAEQRRADGLAATS
ORF10_pKR05      GAAHLDELLGD--TELDFAFVLFS SIAGVWWSGGQSAYAAANAHLDALAQRRRARGLTATS
ORF11_pKR01      AALHLHELTRDL--PLTAFVLFS  AIAGTLGSAGQANYAAANVFLDALAQHRRHQDLPTS
ORF11_pKR02      GAVHLDAFDAP--DSLDAFVLFS SIAGVWWSGGQGQVYAANTFLDTLAERRRARGLAATA
ORF12_pKR01      AACNLHELTRHL--DLTAFVLFS  SIGGVFGGPGQGNVAAANVFLDALAQHRRSQGLAATS
ORF12_pKR02      SALNLHELTAELDIELSAFVLFS SMSGTVGAAGQANYAAANAFLDALAEQRRADGLAATS
ORF12_pKR03      SAINLHELTAELGIELSAFVLFS SVTGTWGTAGQANYAAANAYLDALAEQRRADGLAATS
ORF12_pKR04      AALHLHELTKDL--DLSAFVLFS  AAGTLLGGAGQANYAAANVFLDALARHRTARGLTALS
ORF13_pKR01      ATLILHELTRGL--DLSAFVLFS  SFAATFGAPGQGNQAPGNAYLDAFAEYRRSGPLATS
ORF14_pKR01      AAQVLHELTRDL--DLSAFVLFS  SYAAVFGAAGQANYAAANASLEALAEQRRADGLPATV
ORF14_pKR02      AAWNHLHELTRGL--DLAAFVLFS STSGLFGGPGQGNVAAANSFLDALAQHRRRAHGLPATS
ORF14_pKR03      AAWNHLHELTEGH--DLAFVLFS  SVAGCFGAGQGNVYAANTFLDALAQHRRKARGLTASS
ORF15_pKR01      AALHLHELTRDL--PLTAFVLFS  SAAGVFGAPGQGNVAAANSFLDALAQYRRRAHGLPGRS
ORF15_pKR02      AAWNHLHELTRGL--DLSFVLFS  SAAGVFGGAGQANYAAANVFLDALAQHRRRAQGLAATS
ORF15_pKR03      AAWNHLHELTHGL--DLAAFVLFS  SAAGVFGNAGQANYAAGNTFLDALAQHRRRAQGLTAVS
ORF16_pKR01      ATLLHLHETREL--DLSAFVFFS  SFAATFGAPGQGNVAPGNAYLDAFAEYRRRASGLPATS
ORF16_pKR02      AALTHLHETREL--GLSAFVLFS  GVAGTLGDAGQGNVAAANSYLDALAEQRRHADGLAATS
ORF17_pKR01      AAVHLHELHETREL--DLAAFVLFS AAGTLLGGPGQANYAANTFLDALAHRHRAEGLPATA
ORF17_pKR02      AAWNHLHELTRHL--DLADFVLFS  SAAGTFFGAGQANYAAANVFLDALAHRHRAHGLAATS
ORF17_pKR03      AAWNHLHELTRGL--DLSFVLFS  SAAGVFGGAGQANYAAANVFLDALAQHRRRAQGLAATS
ORF17_pKR04      AAWNHLHELTRGL--DLSFLLFS  SAAGVFGGAGQANYAAANVFLDALAQHRRRAQGLAATS
ORF18_pKR01      AAWNHLHELTRGL--DLSFVLFS  SAAGVFGGAGQANYAAANVFLDALAQHRRRAQGLAATS
ORF18_pKR02      AALHLHELTRGL--DLAAFVLFS  SAAGTLGNPGQANYAAANAFLDALAQHRRRAAGLPAVS

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Figure 7

ORF10_pAC00	SAALRDAAPDTLDPHRPFLDLGFD	SLAAVDLHARLVAGTGLRLPVT	LAFDHPTPAHLARHLH						
ORF10_pAC01	AAVLGHGSDAVGAERAFKELGFD	SLTSVELRNRLGAATDLRLPT	TLVVDYPTSAALAEYLR						
ORF10_pAC02	AAVLGHAGVENVGAGRAFKELGFD	SLMAVELNRNIGSATELRLPAT	LIYDHPTSAALAEFLR						
ORF10_pAC03	AEVLGHTDARAVDADRAFKE	LGFD	SLTAVELRNVLKAATGLRLSPT						
ORF10_pAC04	AAVLGHGGSEAVGAERAFKELGFD	SLTAVELRNRLGAATGVRLPAT	LIFDYPTATALAAYLR						
ORF10_pAC05	AVVLGHGGATAVEAARAFKELGFD	SLTAVELRNRLSTATGLRLPAS	LVFDYPTPAALAAHIR						
ORF11_pAC01	ASVLGHASAEQVDPARAFKDLGFD	SLTAVELRNRLGAATGLRLPT	TLVFDHPTPTALVRHLR						
ORF11_pAC02	ATALGHTSADAVAAERAFKDLGFD	SLTAVELRNRLGAACGLRLPSS	LVFDYPTPNPQALTRHLL						
ORF12_pAC01	AAALGYPGPSAVEPGRSFKELGFD	SLTAVELRNLLGDATGRRLPAT	LVFDYPTATALAGYLR						
ORF12_pAC02	AEVLGHSGAEDIEAGRAFREIGFD	SLTAVELRNRLGAAELRLPAT	LVYDYPTPAALAVHLR						
ORF12_pAC03	AAVLGHAGVESIGAARAFKELGFD	SLTAVELRNRLGAVTGLRLPAT	LIYDYPTSGALAEYLR						
ORF12_pAC04	AAVLGYGSAEHIGGEQAFKELGFD	SLTAVELRNRLGAAGGLRLPAT	LIYDYPNPAALAQHLL						
ORF13_pAC01	AAVLGHADLAAVEAGRAFKE	LGFD	SLTSVELRNRLGAVSGLKLPAS						
ORF14_pAC01	AAVLGYAGPESVDPGSAFRDLGFD	SLTAVEIRNLLTSRTGLRLPAT	LIFDYPNSLSLAAFLQ						
ORF14_pAC02	AAVLGHAGPAAVESGRAFKELGFD	SLTAVELRNRLNAATALRLPAT	LIFDYPDPTVLARYLR						
ORF14_pAC03	AAVLGYAGPDDVDAARGFLDLGFD	SLTAVDLRNRLTASAGLRLPVT	LIFDYPSPALAAAYLA						
ORF15_pAC01	ADVLGHGSPDAIDPEQAFSELGFD	SLTAVELRNRLGAAIGRRLPAT	LIFDHPASLTARHLS						
ORF15_pAC02	AAVLGYASPEAVEKDSSEFRELGFD	SLTAVELRNLLGAATGLRLPAT	LVFDYPTSAVLADHLR						
ORF15_pAC03	AQVLGHSGAAAIIEPGSAFKELGFD	SLTAVELRNRLGAVTGLRLPAT	LIFDYPTPEALSGHLR						
ORF16_pAC01	AAVLGYAGPDAVEAGRAFKE	LGFD	SLTSVELRNRLNAASGLKLPPT						
ORF16_pAC02	ATALGHPTTDEVGAGRAFKE	LGFD	SLIALELRNRLNAATGLRLPAT						
ORF17_pAC01	AAVLGYPGPEAVDPGRAFKELGFD	SLTAVELRNRLGSATGVRLPAT	LVFDYPTPNALSAFLR						
ORF17_pAC02	AAVLGHATPDAVEPTRA	FKDLGFD	SLTAVEFRNRLGATAGIRLPAT						
ORF17_pAC03	AAVLGHASTDEV	PADRAFKE	LGFD	SLTSVELRNRLGATTGERLSAT					
ORF17_pAC04	AAVLGFAGPEAVD	PARSFSEVGFD	SLTAVELRNRLGAATGVRLPAT	LVFDYPTPDALVEYLR					
ORF18_pAC01	AAVLGLAGPEAVD	PARSFSEVGFD	SLTAVELRNRLGAATGVRLPAT	LVFDYPTSLALADFLG					
ORF18_pAC02	AAVLAYPSPDAVGESQEFLE	GLD	SLTAVELRNQLNAATGLRLPAT	LLFDHPTPALVAERLR					
	: . *	:	* : * : *	* : : : :	:	:	* . : * : * :	:	:

Figure 8

ORF18_pTE02 AAF71777 NYST	---RGDTRPGLVCFSSILSISG-----PHQ-----YARFASAFRGRRDVHALGAPG--F MTTSTEEESLWARCFHPAPAAPVRLFCFPHAGGSASFYFPVSAQLSSVAEVFAIQYPGRQD ** : ** * ::: :*.*: **
ORF18_pTE02 AAF71777 NYST	LRGEQLPSATDAVIEAQAEAVLRHADGAPFVLLGHSSGGMLAHAVAGRLESEG----- RRKEAGVSDLATLADQVYDALRPLLKERPSTFFGHSMGATLAFEVARRFEADDGDLVRLF * * * ::: *: . * .:** * ** *:*:..
ORF18_pTE02 AAF71777 NYST	----VFPQALVMIDIYSHDDDAIIGIQPGLSEGMDERQDTYVPVDDNRLLAMGAYFRLFG ASGRRAPSRVREEAVHRRSDDGIVEELK-LLAGTNTALLGDEEILRMILPAIRSDYQAIE * : :::*.*: * * : : * *: :::
ORF18_pTE02 AAF71777 NYST	GWK--PEVVKTPTLLVRAGERFFDWTRSTDGDWRSYWDLDTALDVPENFTMEEHAPT TYRCPPDVTVRAPLTVLTGDRDPKTSLDEAEAWRGHTTGDFDLKVLPGGHF-FVSSEAPA :: *:.* ..* *:.* .: **.: * :*.** :....*:
ORF18_pTE02 AAF71777 NYST	TAQAVEGWLDTTG IIDLLRAHLAGNG : ... * *

Figure 9

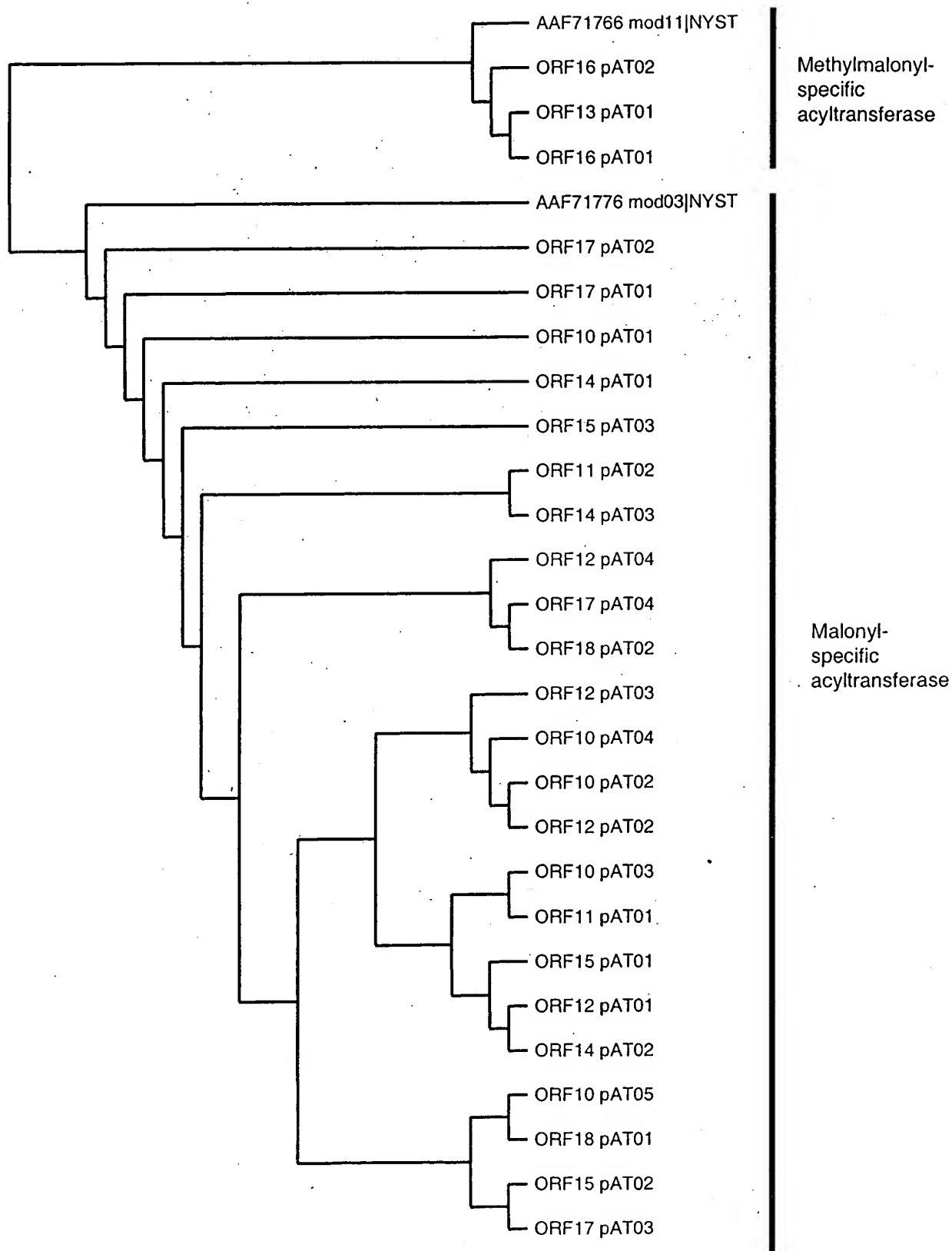
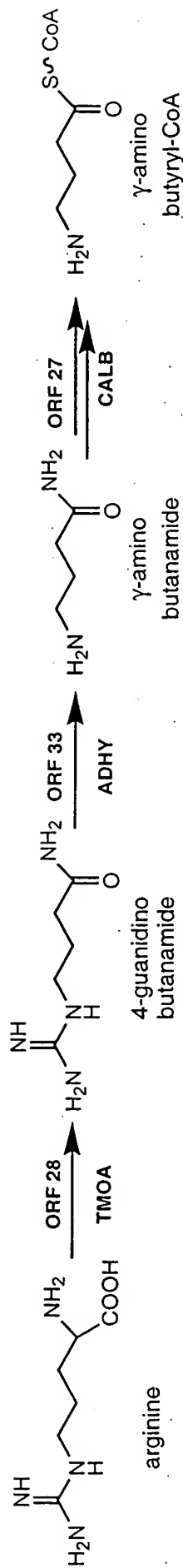


Figure 10

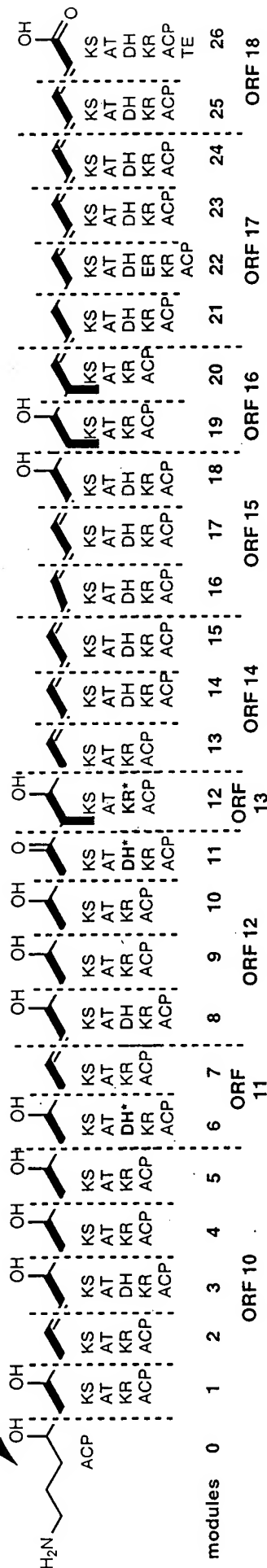
a



b

γ -amino butyryl-CoA

ORF 19
AYTF



c

dNDP-L-rhamnose

ORF 9
GTFA

aminohydroxy cyclopentenone

ORF 34
ADSN

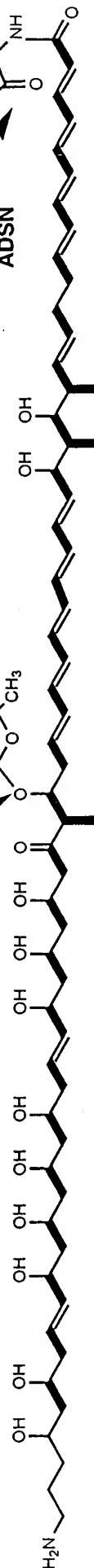
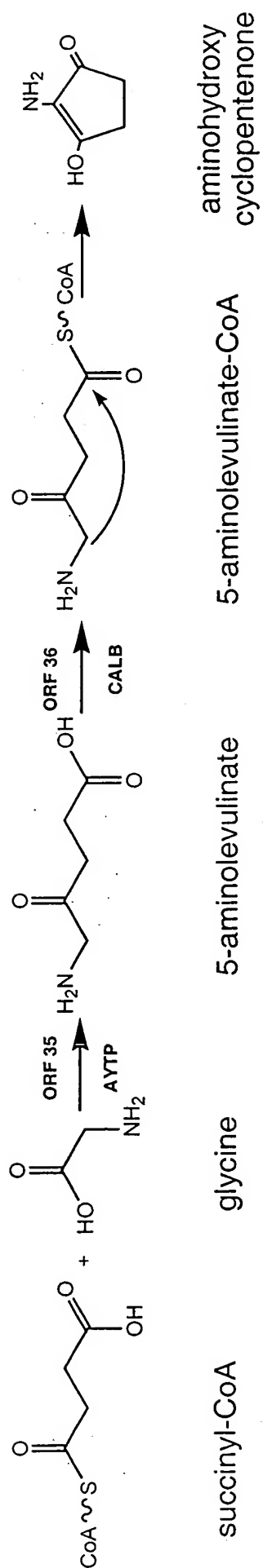


Figure 11

a



b

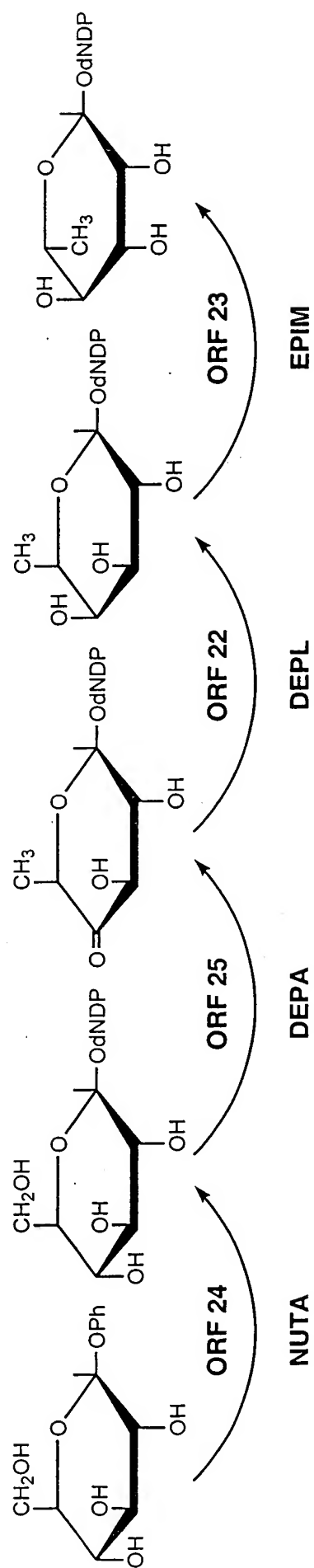


Figure 12a

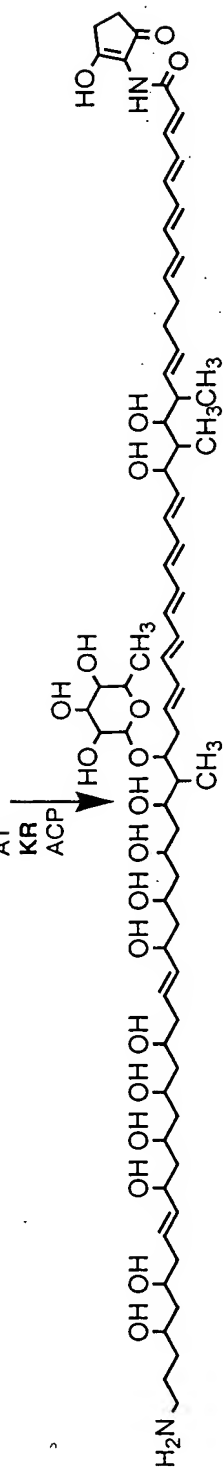
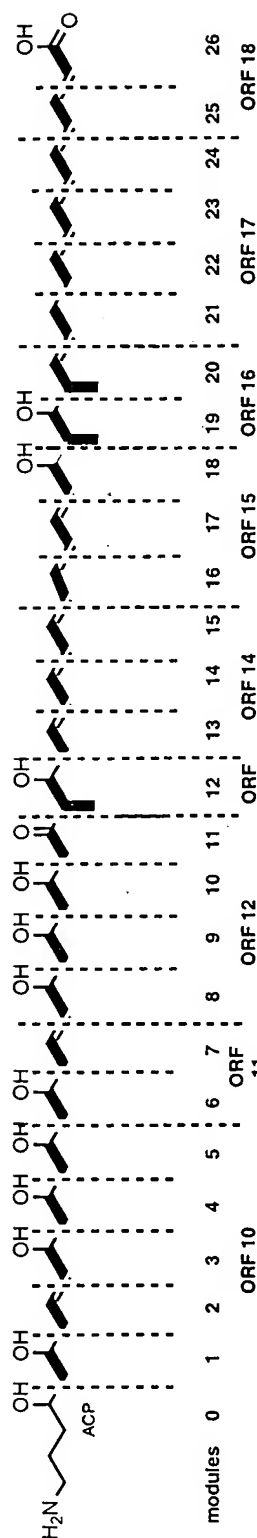


Figure 12b

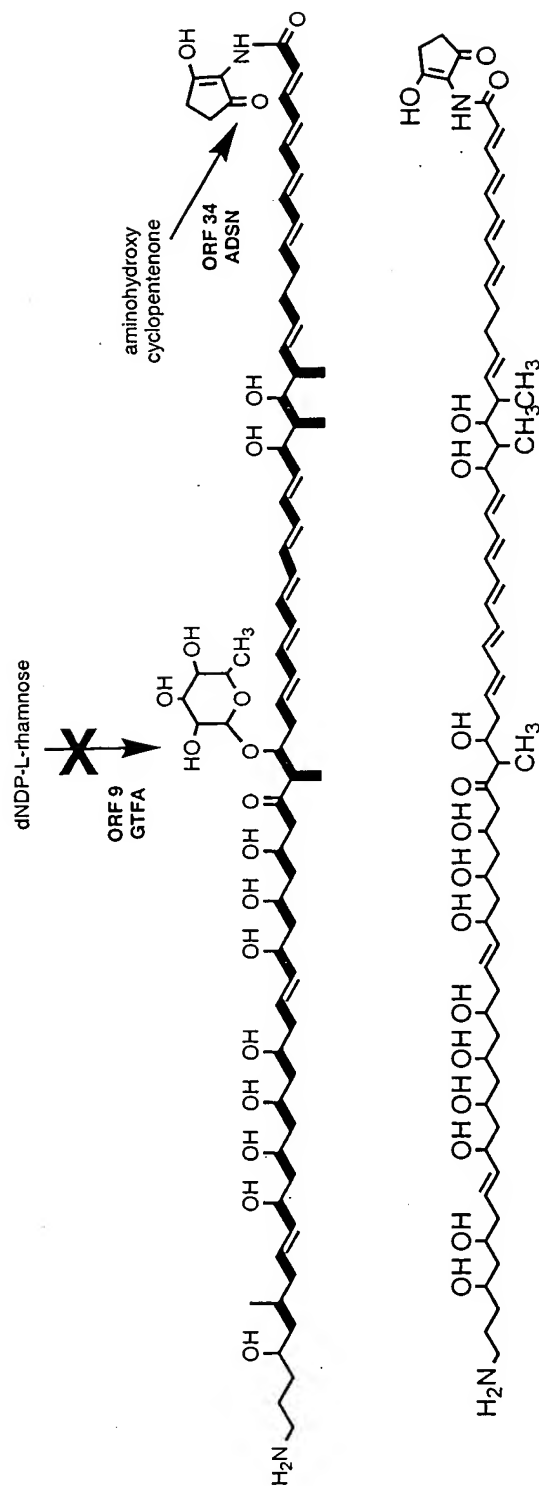


Figure 12c

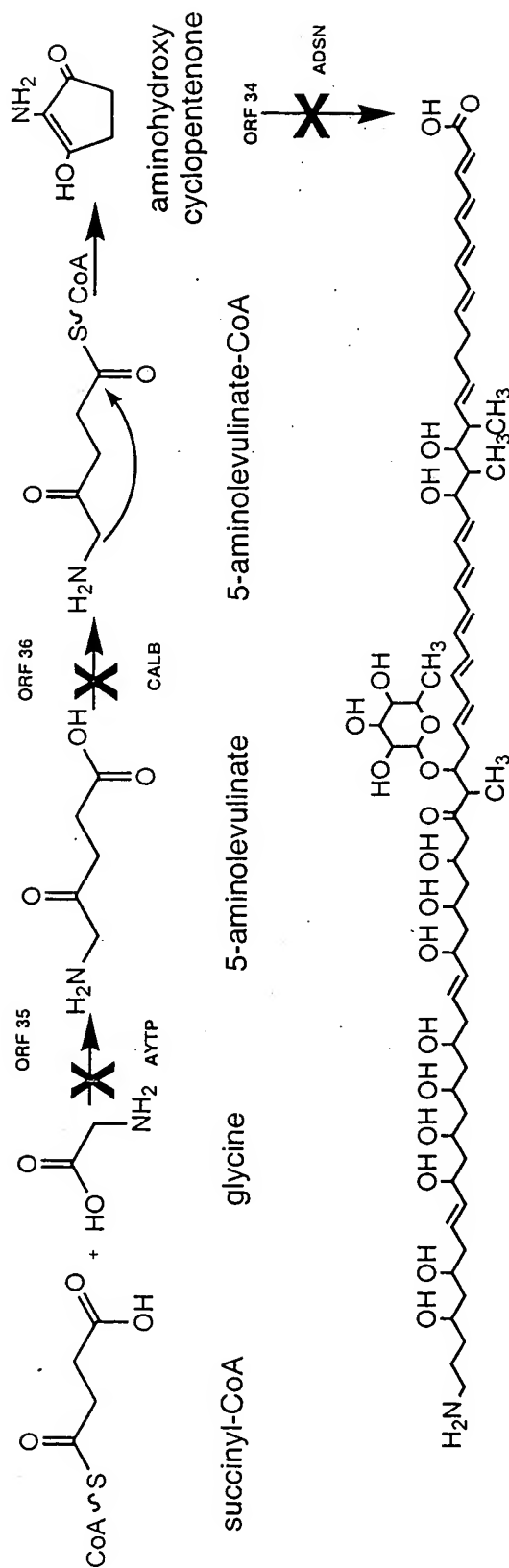
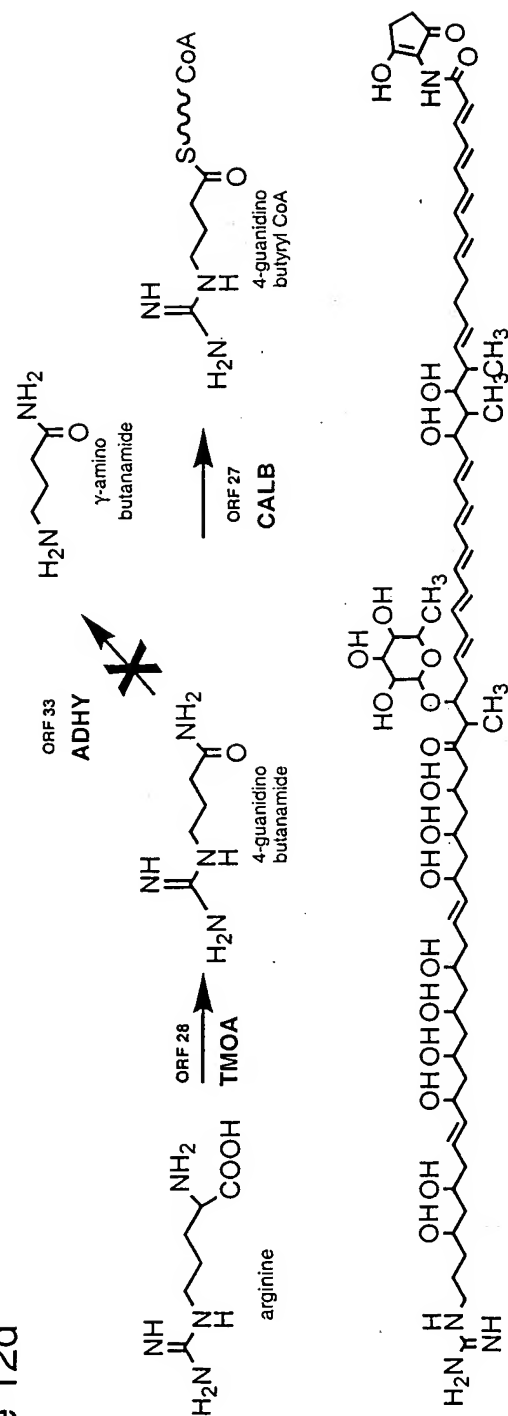
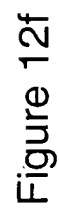


Figure 12d





023X04QB1_R1

023QBA0704c01_R1 1194 (31.880) Cm (1185:1207)

2: Scan ES+
8.34e7

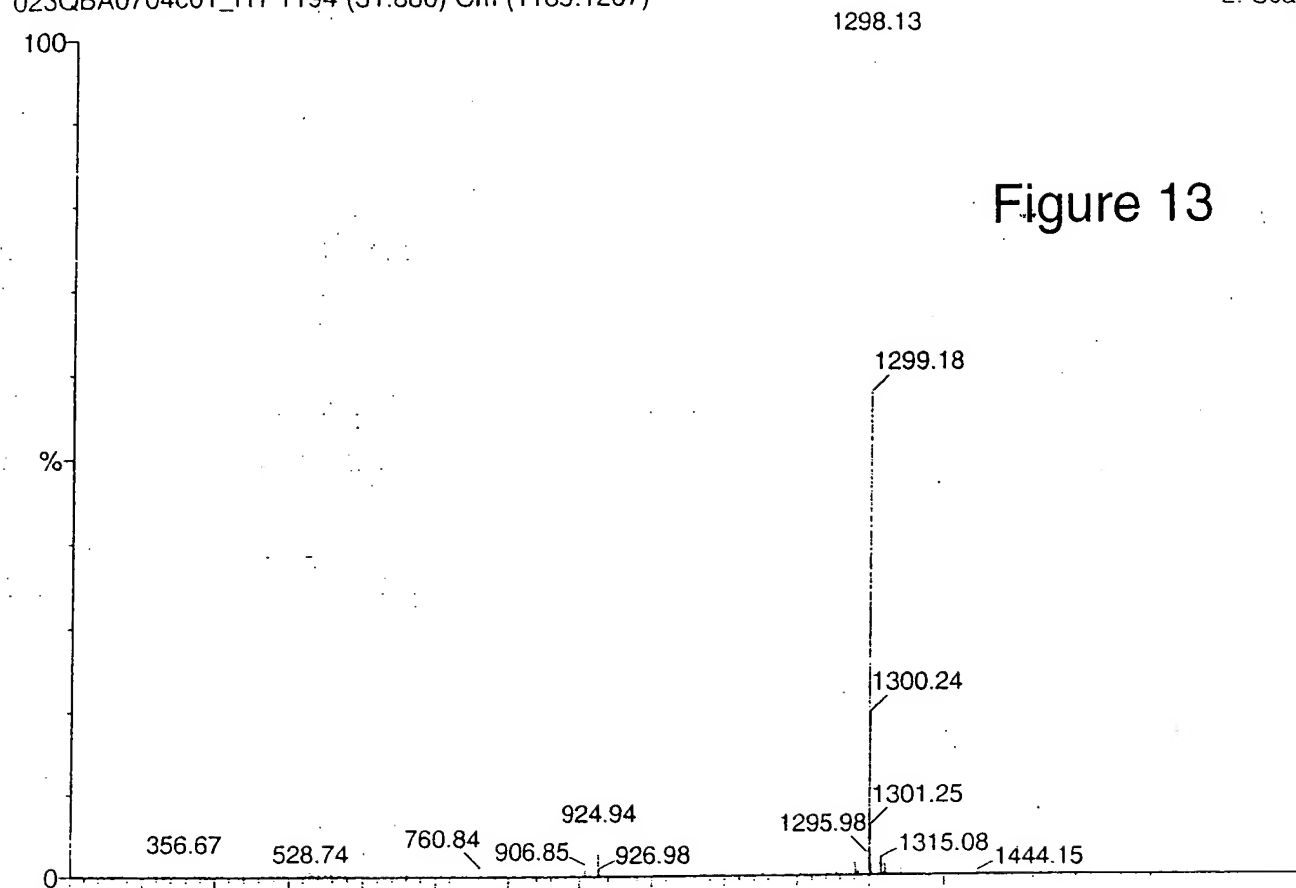
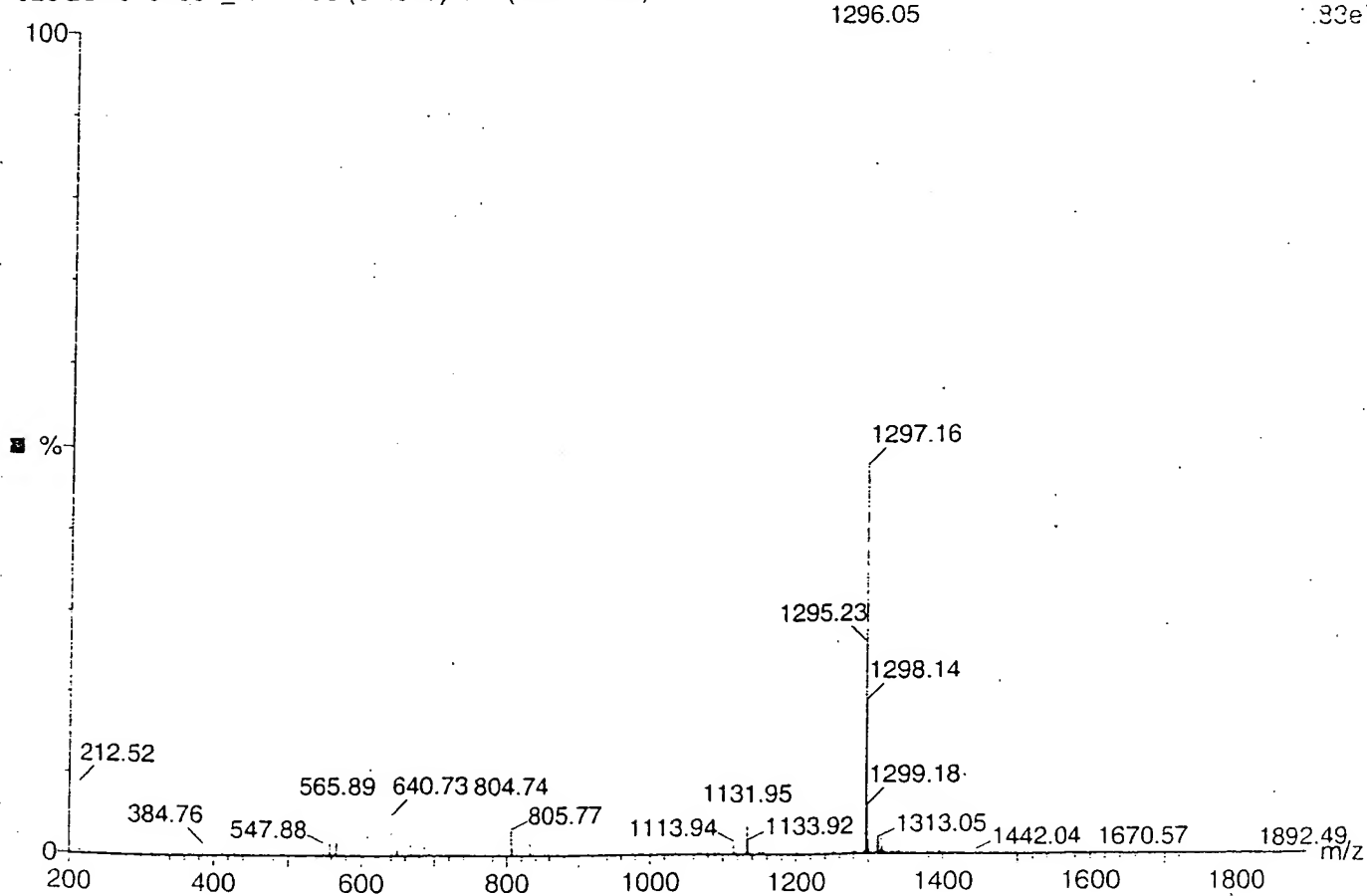


Figure 13

023QBA0704c01_R1 1196 (31.920) Cm (1184:1207)

1: Scan ES-
8.33e7



023X04QB1_R1

023QBA0704c01_R1 1922 (32.135)

3: Diode Array
2.10e6

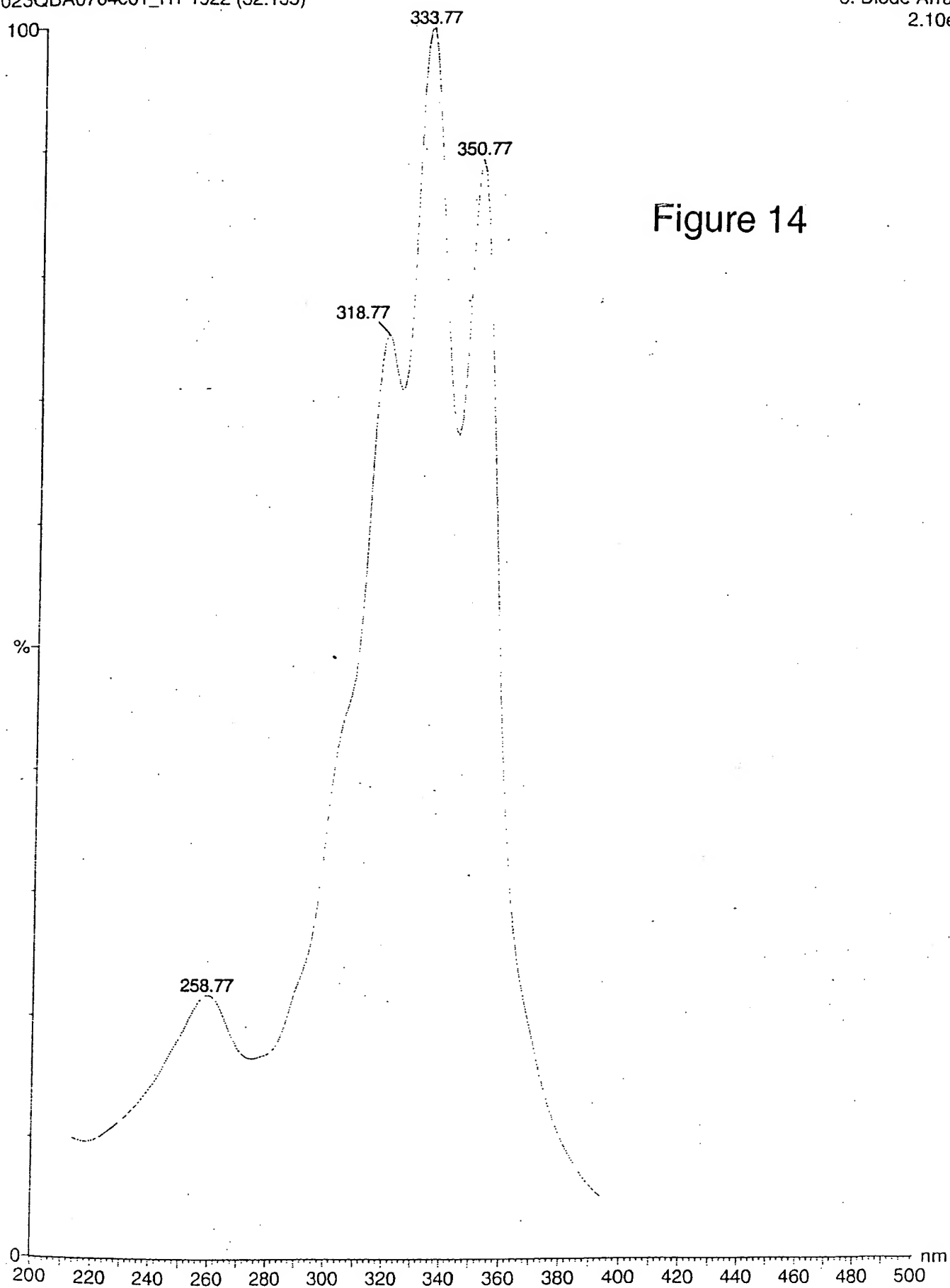


Figure 14

ECO02301_proton_MeOH_spinning

exp2 szput

date	Sep 24 2002	DEC. & VT.	125.674
solvent	CD3OD	dn	C13
file	/export/home/~dpwr	dpwr	30
nmr1/ECO02301/ECO-	dof	nnn	0
02301_MeOH_proton_~	dm	dm	.c
spinning.fid	dmm	200	
ACQUISITION	dmf		
sfrq	499.752	dseq	
tn	1.892	HI	1.0
at	30272	homo	n
np	8000.0	PROCESSING	
sw	not used	wtfile	ft
fb	32	proc	not used
bs	59	fn	f
tpwr	5.5	math	
pw	0	werr	
di	0	wexp	
tof	32	wbs	
nt	32	wnt	wft
ct	32		
alock	n		
gain	26		
FLAGS			
ll	n		
ln	n		
dp	y		
hs	nn		
DISPLAY			
sp	-122.1		
wp	3836.9		
vs	5471		
sc	0		
wc	250		
hzm	15.35		
ls	7547.31		
rfl	1509.3		
rfl	0		
th	5		
ins	3.000		
nm cdc ph			

Figure 15a

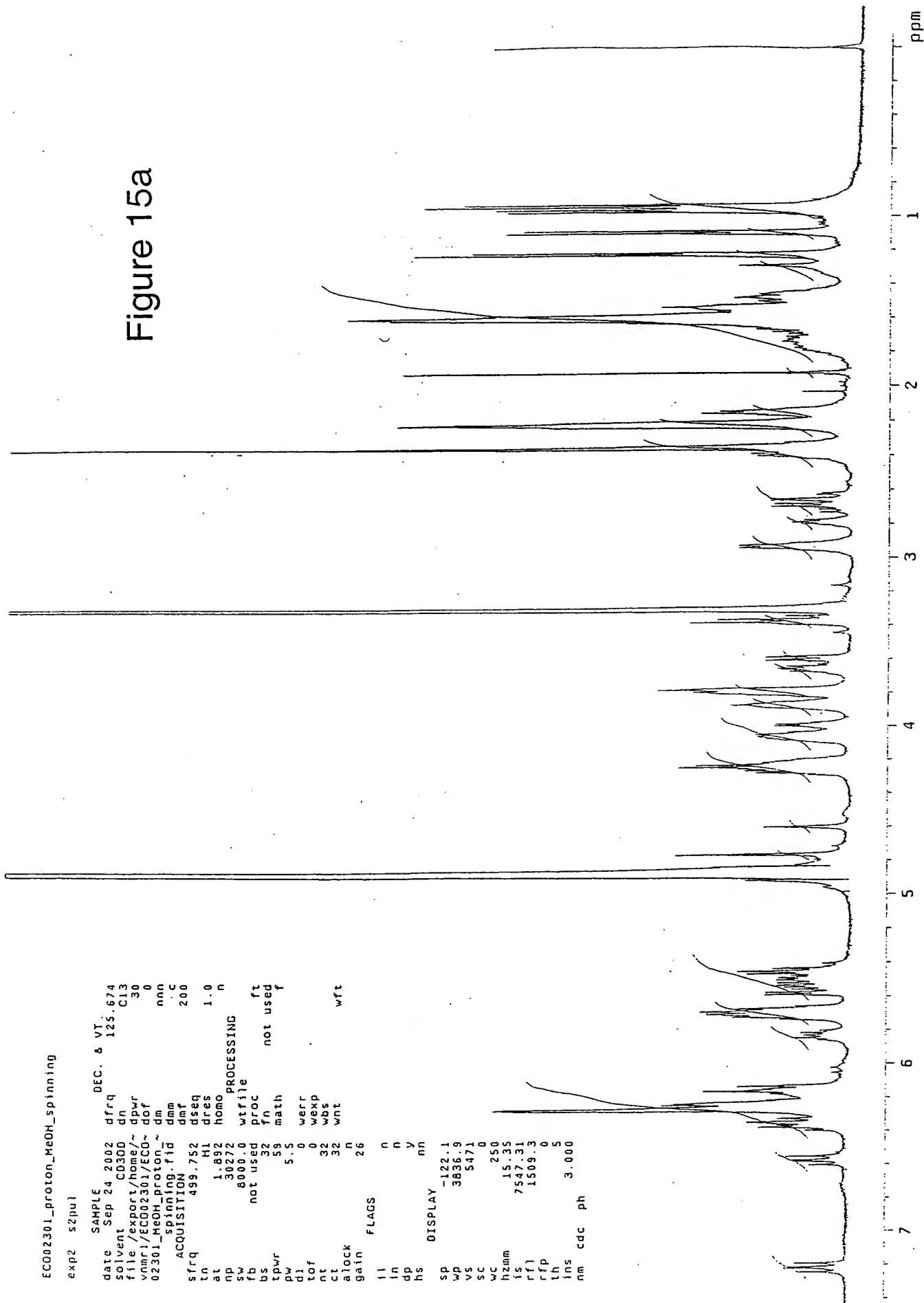
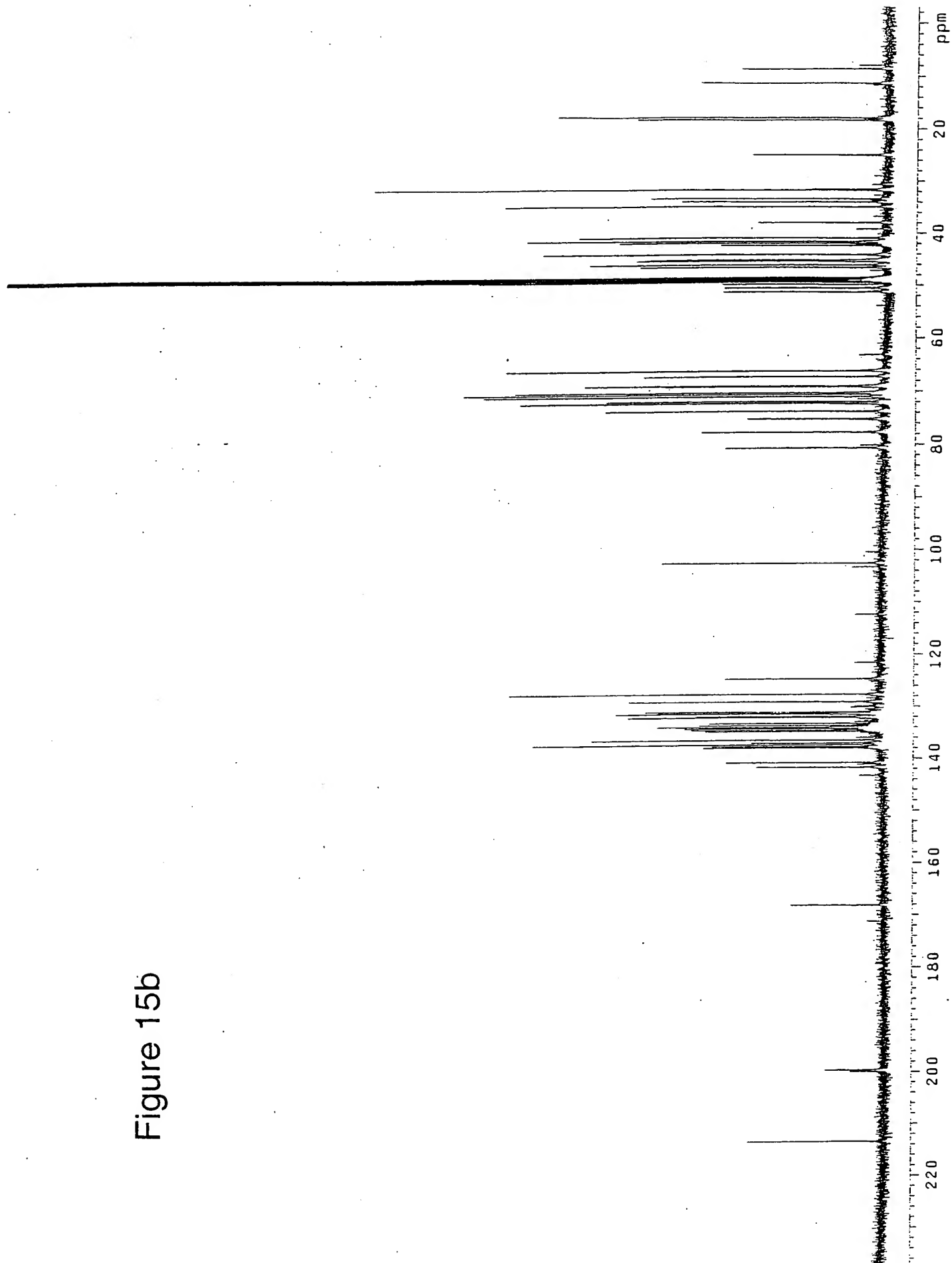


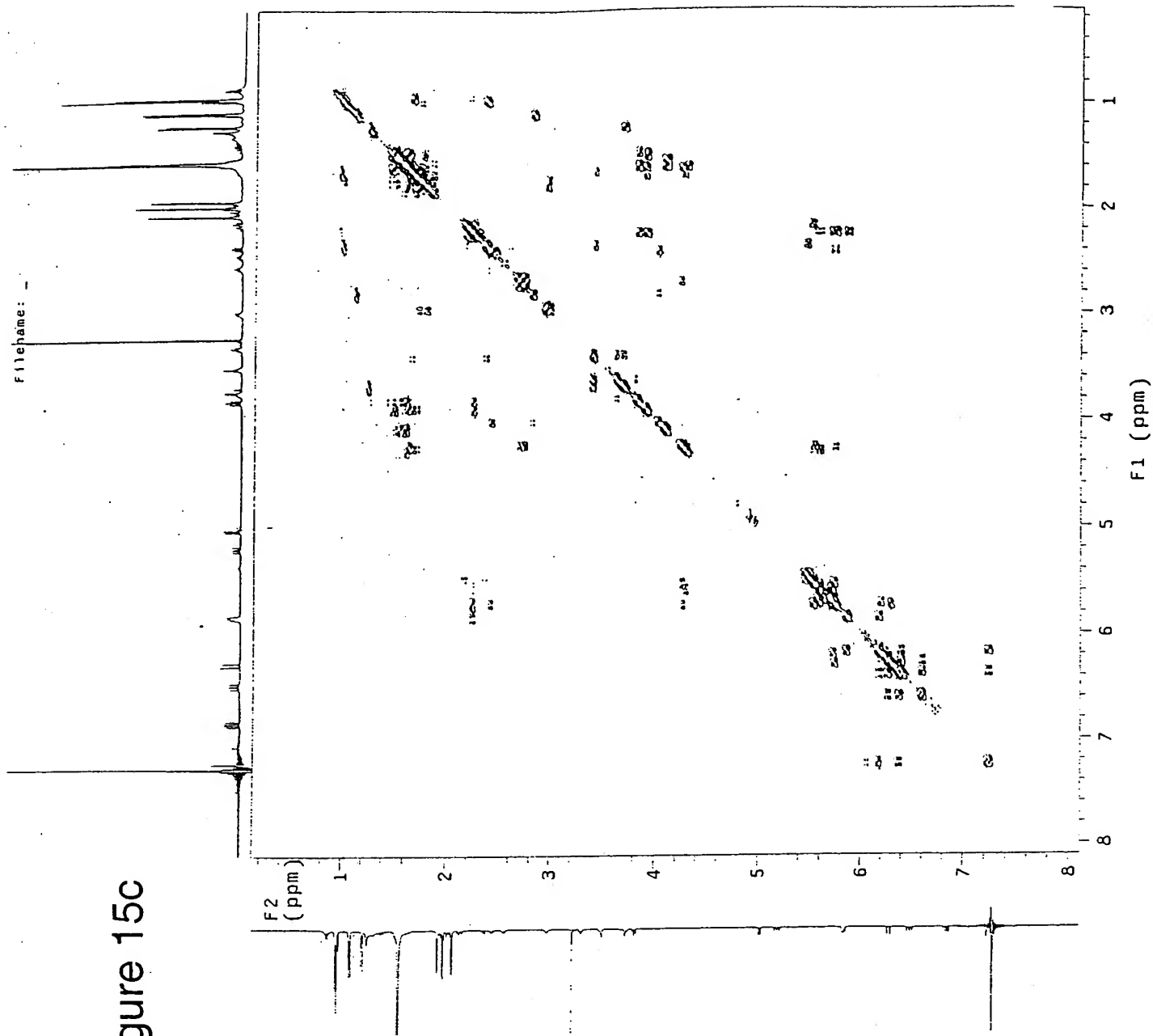
Figure 15b



STANDARD PROTON PARAMETERS
Pulse Sequence: gDQCOSY
Solvent: CD300
Ambient temperature
File: ECD_02301_gDQCOSY_CD300_high_res
INOVA-500 "resonance"

Relax. delay 1.000 sec
Acq. time 0.128 sec
Width 3988.0 Hz
20 Width 3988.0 Hz
32 repetitions
2 x 500 increments
OBSERVE H1, 499.7495714 MHz
DATA PROCESSING
Sf. sine bell 0.096 sec
Shifted by -0.064 sec
F1 DATA PROCESSING
Sf. sine bell 0.037 sec
Shifted by -0.025 sec
FT size 8192 x 6192
Total time 10 hr, 48 min, 6 sec

Figure 15c



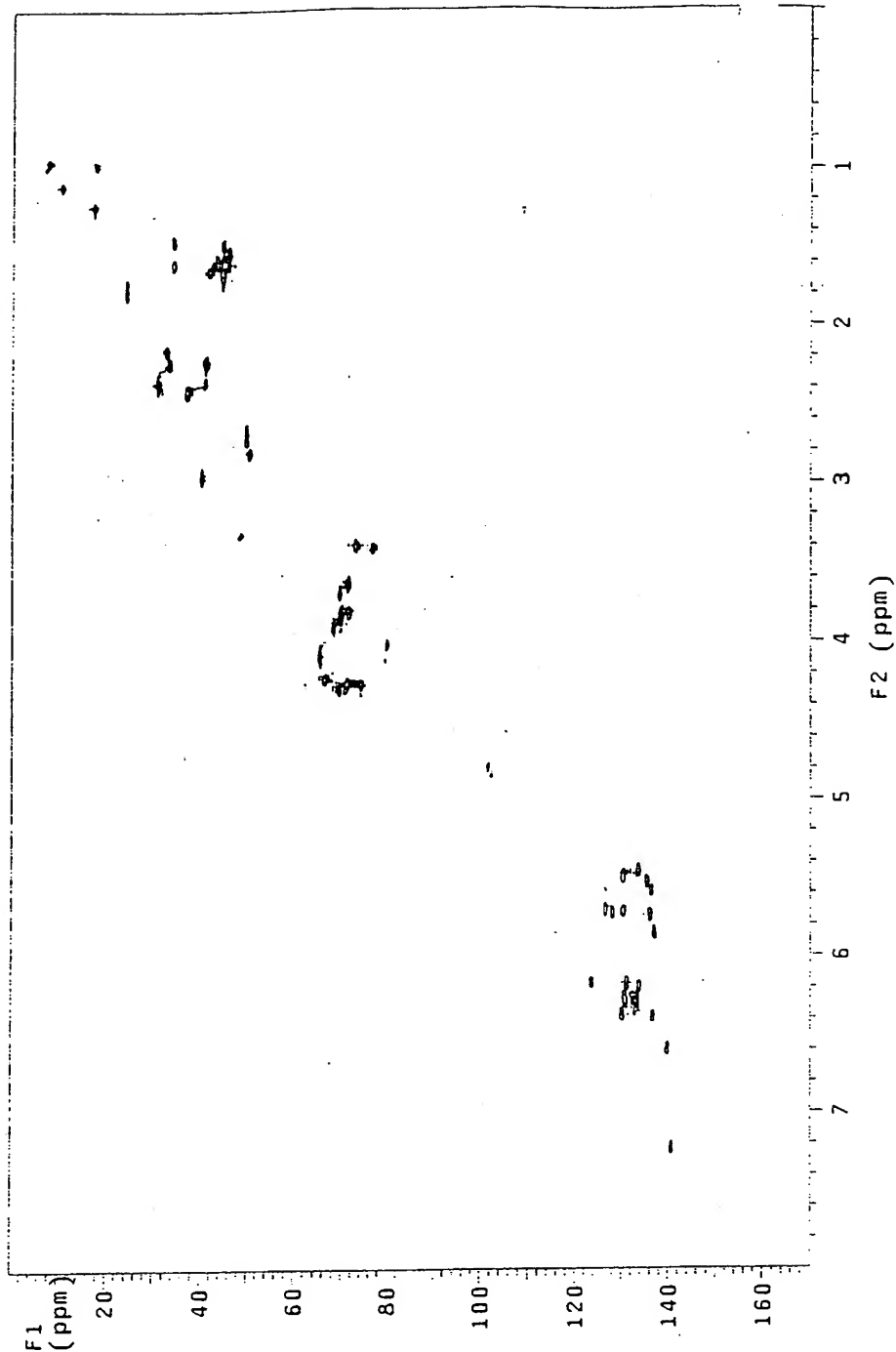
Filename: --

STANDARD PROTON PARAMETERS

Pulse Sequence: ghsqc
Solvent: CD300
Ambient temperature
File: ECO-02301_CD300_ghsQC_12_02
INOVA-500 "resonance"

Relax. delay 1.000 sec
Acq. time 0.128 sec
Width 4001.6 Hz
20 Width 21361.8 Hz
64 repetitions
2 x 128 increments
OBSERVE H1, 499.7495714 MHz
DECOUPLE C13, 125.6727810 MHz
Power 40 dB
on during acquisition
off during delay
W40 id4719 modulated
DATA PROCESSING
Gauss apodization 0.059 sec
F1 DATA PROCESSING 0.022 sec
Gauss apodization 0.022 sec
FF size 2048 x 2048
Total time 5 hr, 28 min, 9 sec

Figure 15d

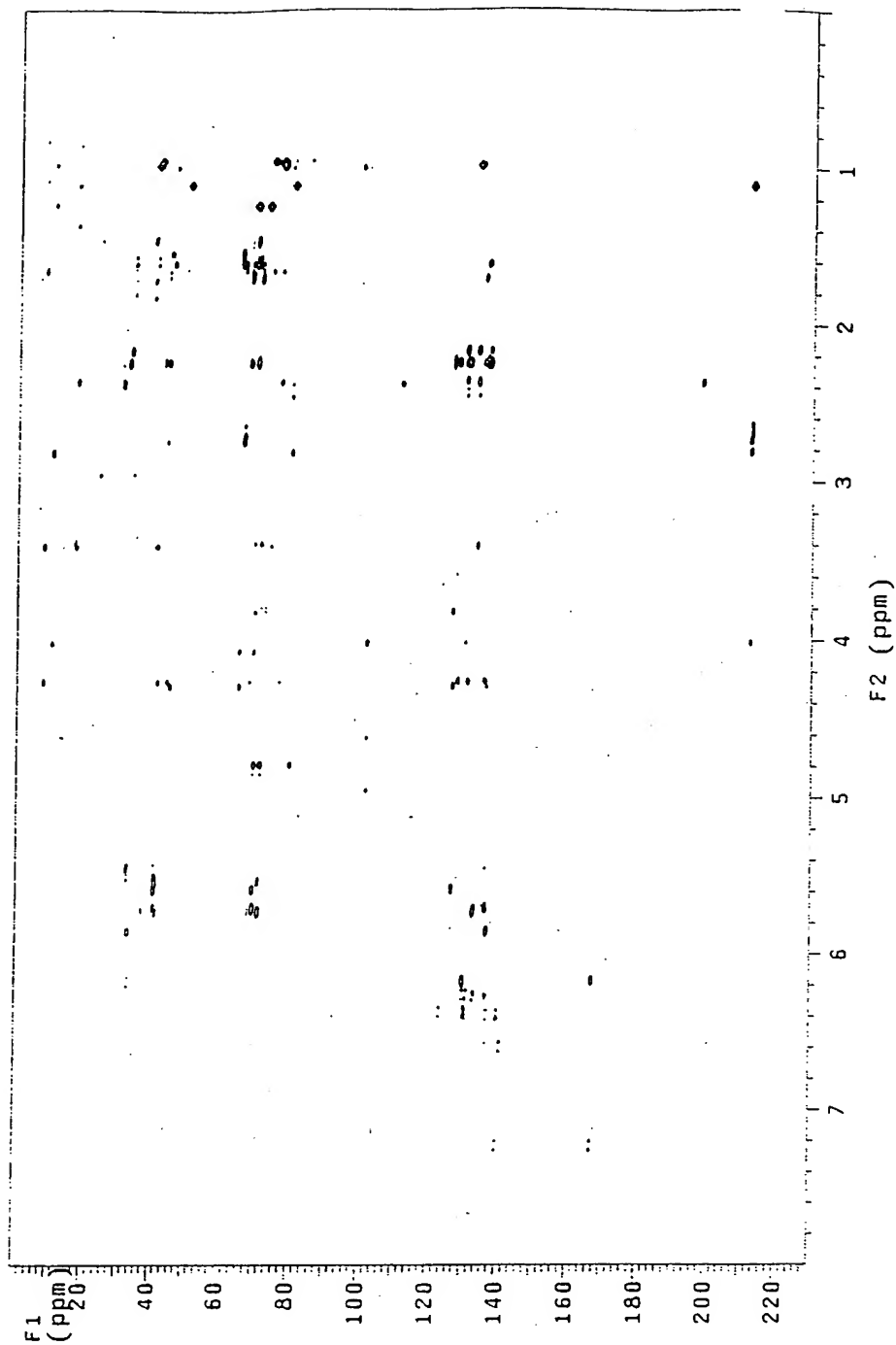


STANDARD PROTON PARAMETERS

Pulse Sequence: ghmBC
 Solvent: C0300
 Ambient temperature
 File: E0002301_C0300_gHMBC_12_02
 INOVA-500 "resonance"
 Relax. delay 1.000 sec
 Acq. time 0.128 sec
 Width 4001.6 Hz
 2D Width 28901.7 Hz
 128 repetitions
 400 increments
 OBSERVE H1, 499.7495714 MHz
 DATA PROCESSING
 Sine bell 0.064 sec
 F1 DATA PROCESSING
 Sine bell 0.007 sec
 FT size 2048 x 4096
 Total time 17 hr, 18 min, 49 sec

Filename: _

Figure 15e



STANDARD PROTON PARAMETERS

Pulse Sequence: TOCSY
 Solvent: CD300
 Ambient temperature
 File: 02301_CD300_TOCSY_mix_08
 INOVA-500 "resonance"
 Relax. delay 1.000 sec
 Mixing 0.080 sec
 Acq. time 0.128 sec
 Width 4001.6 Hz
 2D Width 4001.6 Hz
 32 repetitions
 2 x 200 increments
 OBSERVE H1, 499.7495714 MHz
 DATA PROCESSING
 Gauss apodization 0.059 sec
 F1 DATA PROCESSING
 Gauss apodization 0.046 sec
 FT size 2048 x 2048
 Total time 4 hr, 29 min, 30 sec

Filename: _

Figure 15f

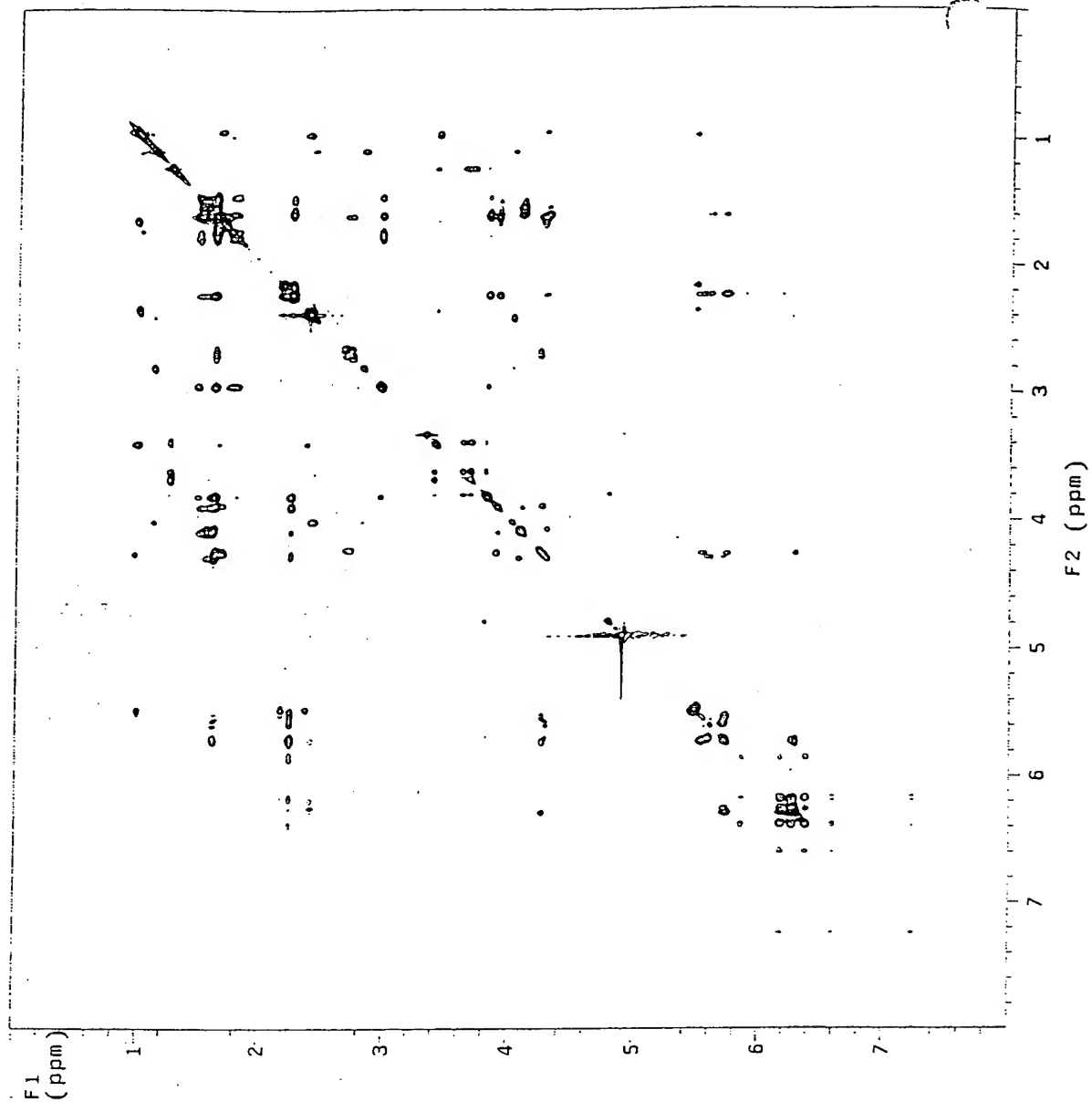


Figure 16

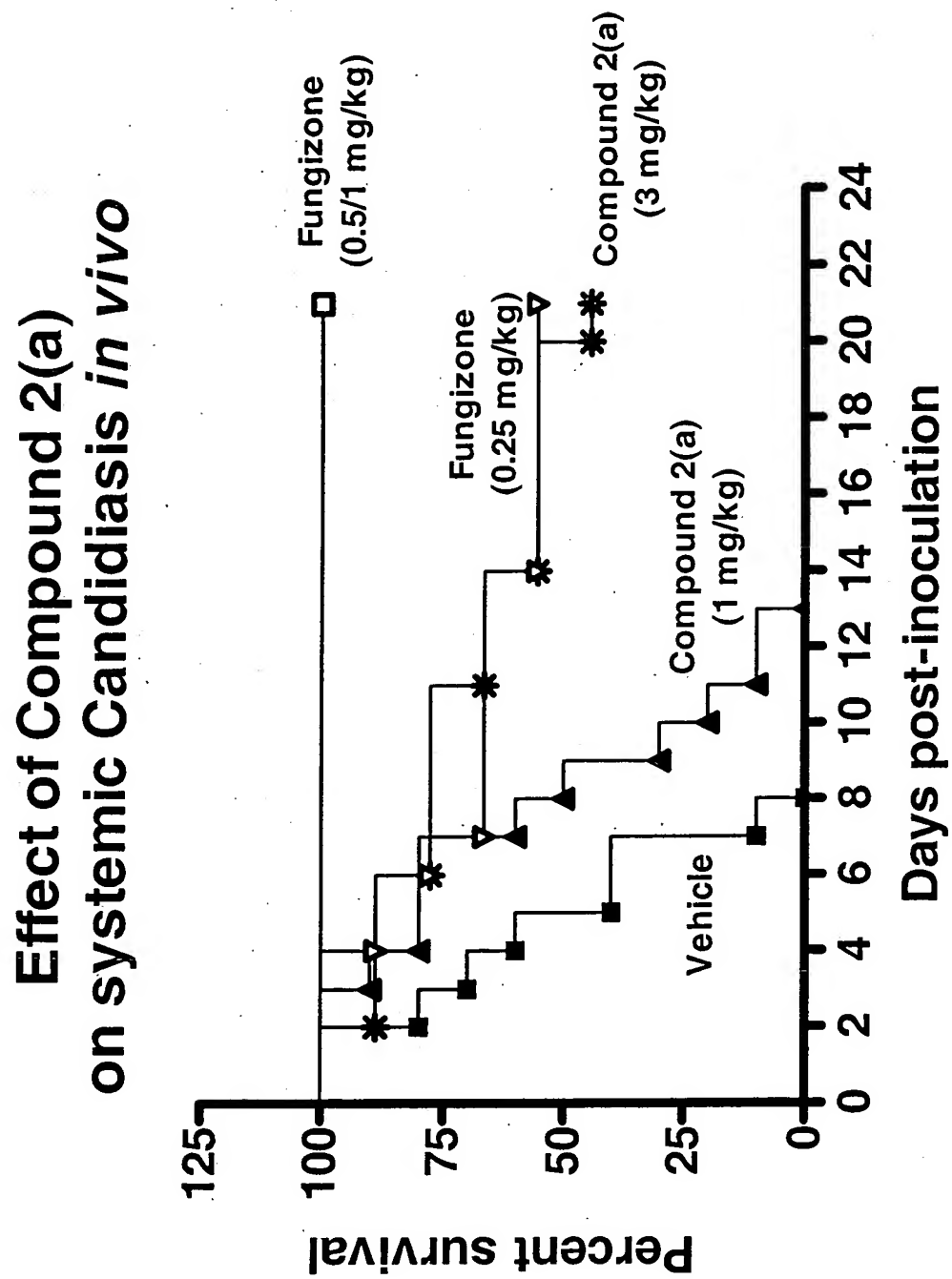


Figure 17a

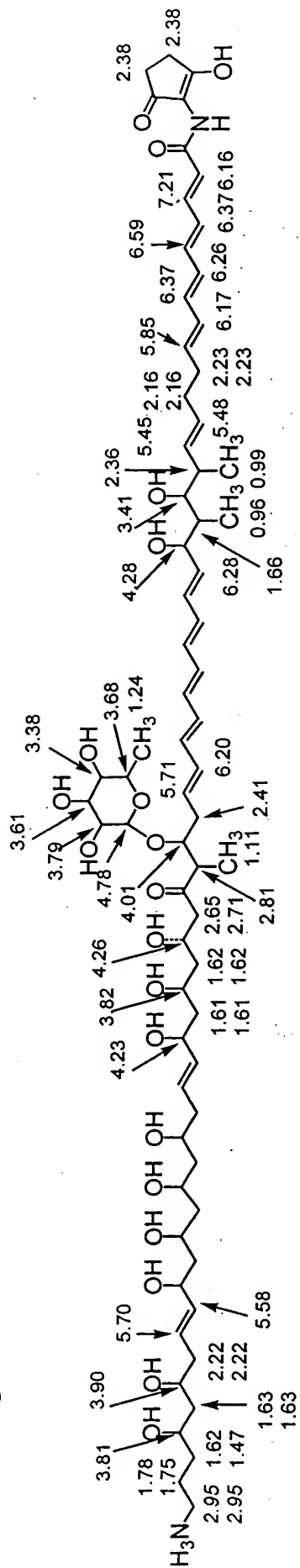


Figure 17b

